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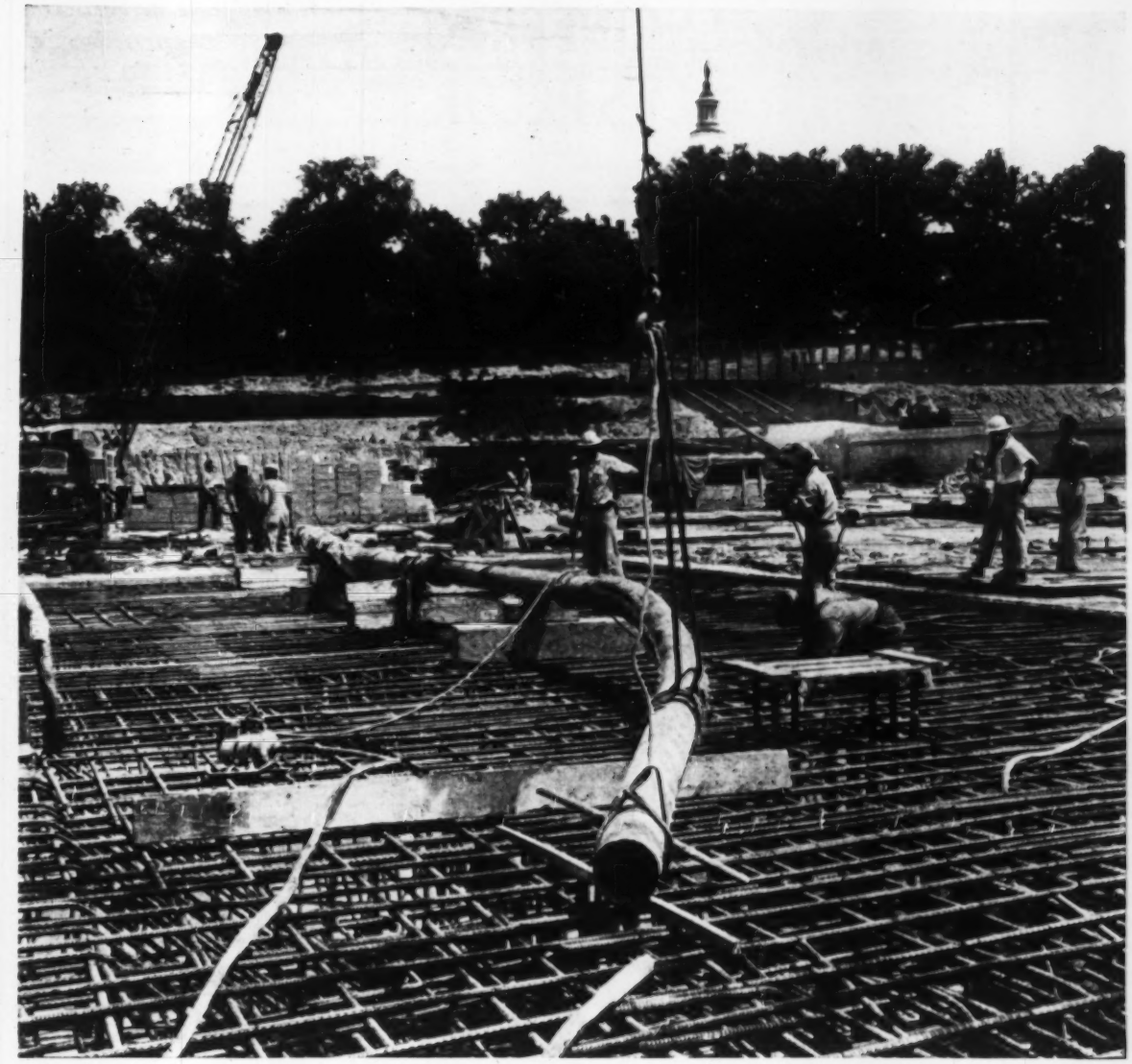

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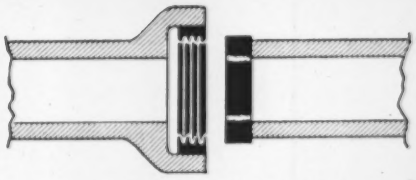

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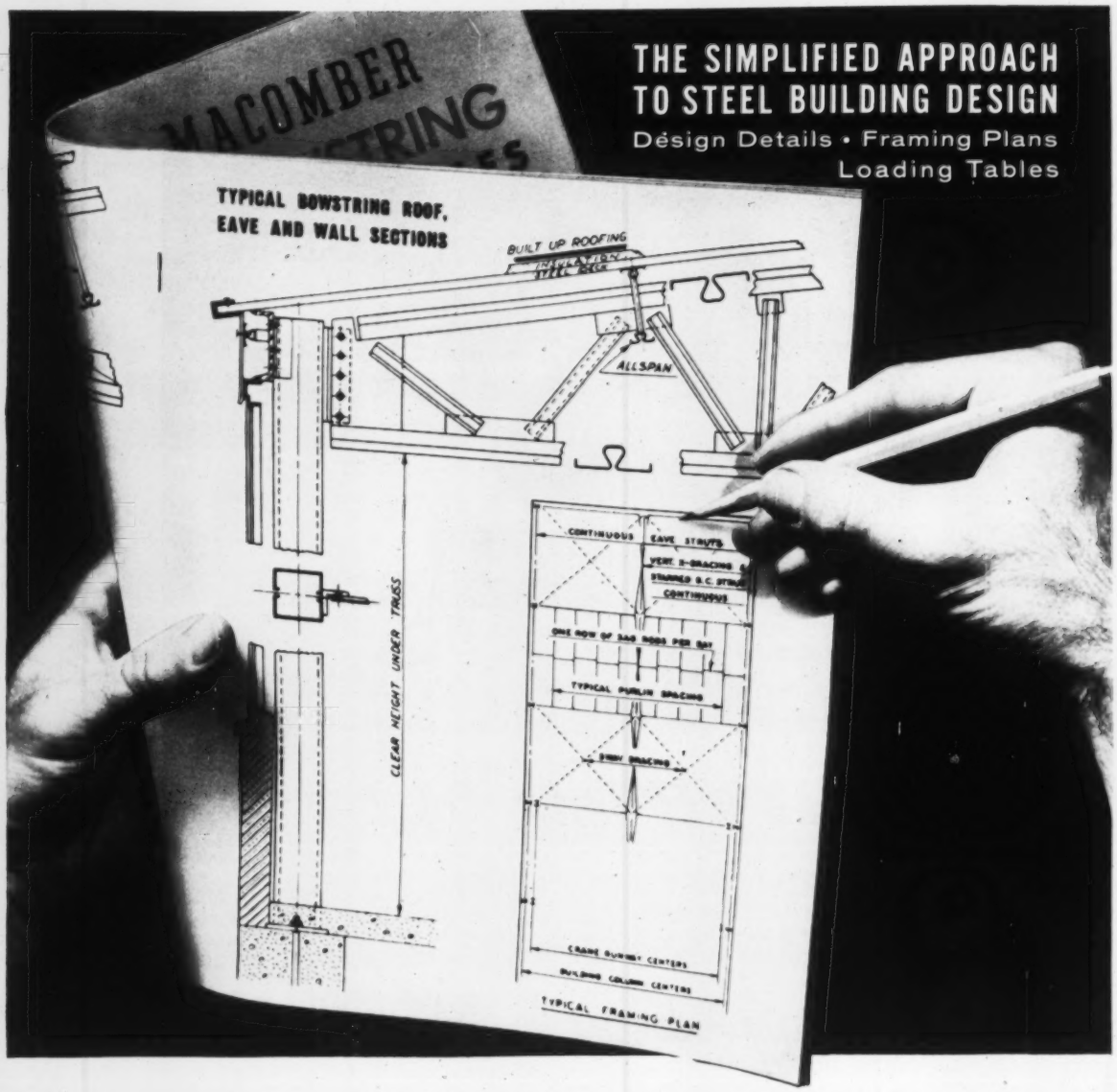

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More on the Status of Civil Engineering

- **A plea that the "controversy" be stopped.**
- **A statement of how AGC supports education.**
- **And a "last word" by Professor Irish, whose comments on an ENR editorial set it all off.**

SIR—After some 30-odd years endeavoring to achieve some modicum of ability in the art and science of civil engineering I find it very amusing to read the reaction of the various types of practitioners in the field to your provocative editorial and Reader Comment on the present status of the profession.

I sincerely believe that the analysis of the so-called "ills" of the profession as presented in your columns maligns the essence of ethical engineering practice which is most essential to maintain.

The whole field of engineering has suffered from a commercialization by the large industrial employer of engineers, who has done his best to eradicate the high ethical standards of the profession and substitute a money-conscious, grubbing technocrat and technician.

To all engineers who are men of good will: Do not enter into a controversy which could tear our profession apart. Stand by your ethics and standards and ignore the bastard growths which, like barnacles, are feeding on our accomplishments and growing fat. Let the industries do the careening and let them make their own analysis of their individual situations. We are not at fault.

WILLIAM GIDLOW
Lewiston, N. Y.

▶Mr. F. A. Upson states (ENR Sept. 3, p. 6) that the universities "should increase the quality of their graduates by being more rigorously selective in their graduation requirements . . . ," referring particularly to departments of Civil Engineering. I believe that this criticism is not founded on factual evidence and is not valid.

The department of civil engineering of the Pennsylvania State University is probably quite typical of the larger undergraduate schools of the country. Over the past 13 years we have graduated just 30% of all freshmen who have entered as civil engineers. Over two-thirds of the entering freshmen are from the upper two-fifths of their high school classes and the other third were admitted largely by competitive examination. Now I ask just how rigorous can you get? Is 30% too high? We are already under heavy criticism for failing to graduate a higher proportion of our entering students.

Of course, there are those among our graduates whom we think will not become true professional engineers but we find that we are often wrong on these judgments which, after all, are only opinions. All we in education can do is to see that our students are well trained and meet sound minimum academic standards. What they do with their lives after they leave us is beyond our control. No educator claims the omnipotent power which he would have to have to deny graduation to a student on the grounds that he would never reach professional status. Graduation is still called "Commencement" and what his employer does with the embyro engineer is certainly as important in the young man's progress toward true professionalism as is his educational background.

B. A. WHISLER, *Head*
Department of Civil Engineering
Pennsylvania State University
University Park, Pa.

▶Engineering News-Record has printed many very interesting reactions to my Reader Comment (ENR June 25, p. 7). My letter claimed that there was little or no glamor in civil engineering and that the construction industry offered little or no inducement for employment to the civil engineering student. I asked what can civil engineering offer to encourage students to study in the important field of civil engineering. An analysis of the replies gives the answers, I believe, in a very positive fashion.

Professors John A. Logan and W. E. Howland in their replies (ENR Sept. 3, pages 6 and 10) point out the true present day areas of concern for the civil engineer, namely: transportation, urban development, natural resources planning, and overseas development. Herein, I believe, lie the big opportunities and challenges in civil engineering. Furthermore, it is the latter attribute—challenge—which we can and should sell to our students.

What phase of engineering finds itself involved in a wider role in our civilization than civil engineering? What phase of engineering is more intimately involved with the day-to-day problems of T. C. Mits—The Common Man in the Street? What phase of engineering is attempting to do more positive good for humanity than civil engineering? The four spheres of activity mentioned above will require the best brains, the best efforts which this country has to offer.

I could not agree more with Professor Logan on the desirability of emphasizing the "forest" of broad objectives in civil engineering, and I could hardly agree less with Professor G. A. Leonards (ENR July 23, p. 6) on the wisdom of emphasizing the "tree" of detailed, specialized equations of fluid flow through a zoned embankment subject to varying intensity of rainfall.

Civil engineering has seen its original all-inclusive area of activity whittled away and whittled away as men of vision say a new area of challenge and activity, and established whole new branches of engineering from one after another minor phase of civil engineering. Civil engineering must most certainly have its share of men of vision who will see the "forest" which will benefit by a good, sound engineering approach. Civil engineering must ever look forward to new areas of activity and new challenges, lest it be nibbled to death by aggressive, challenged groups who exploit one phase after another of civil engineering until it is no more.

The civil engineer, I believe, will be at his best and will contribute the most if he makes a point of being the "generalist" of engineering, just as the true liberal arts colleges turn out. In other words, the civil engineer should have the ability to see the "forests" and appreciate and know how to analyze these over-all problems which we face more and more often in our daily whirl, and which should most definitely best yield to a satisfactory solution if an engineering approach is used.

In regard to the criticism of some of the words which I used, do the writers know the true meaning of glamor? Do they know that Webster defines it as "any association with an object or person through which the object or person appears delusively glorified"? I am afraid much of engineering like much of show business, for example, is truly glamorous. It is all too often delusively glorified and a source of real disillusionment when the true nature of the work is comprehended.

Why do so many qualified students drop out of engineering after a year or

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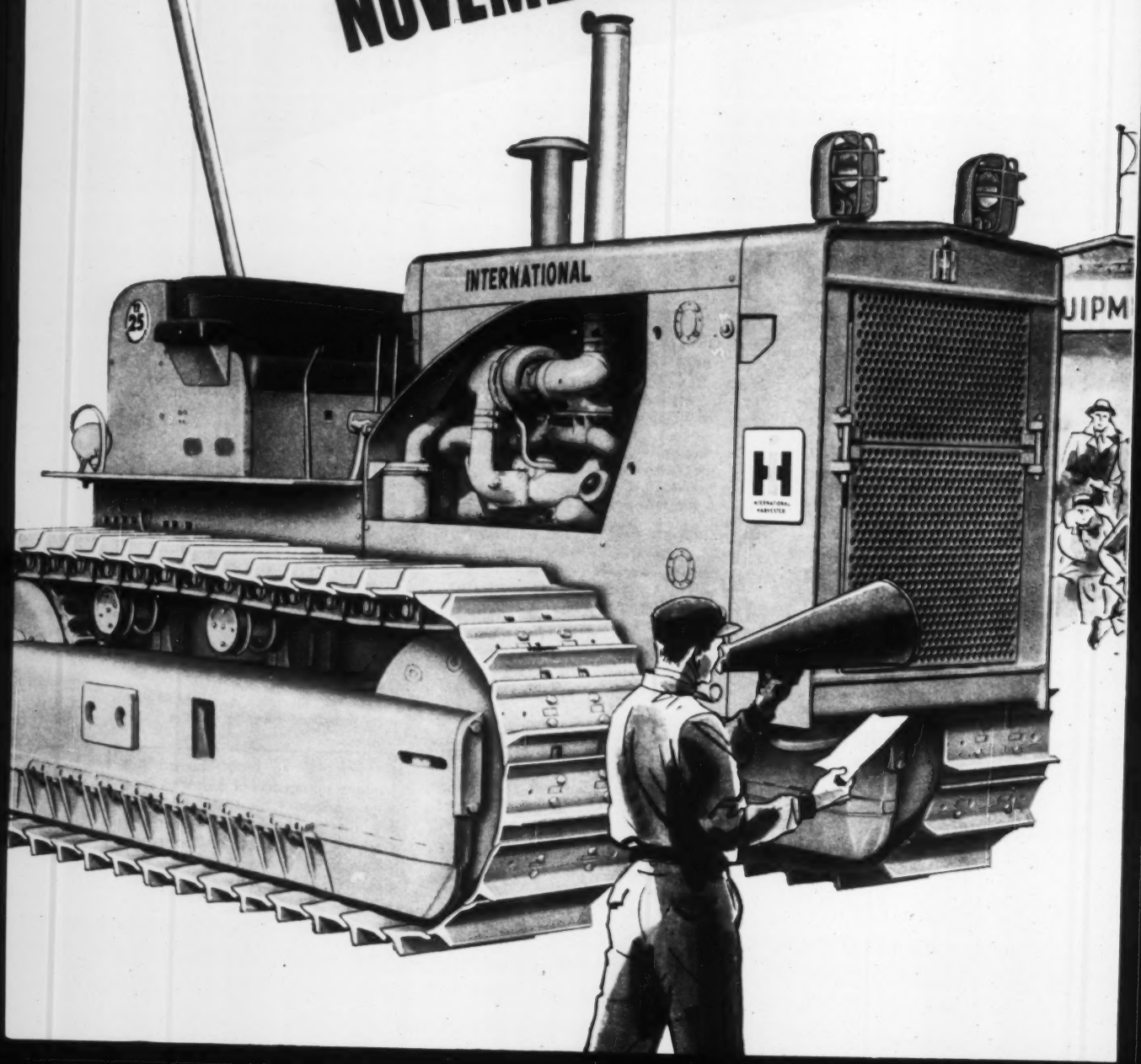

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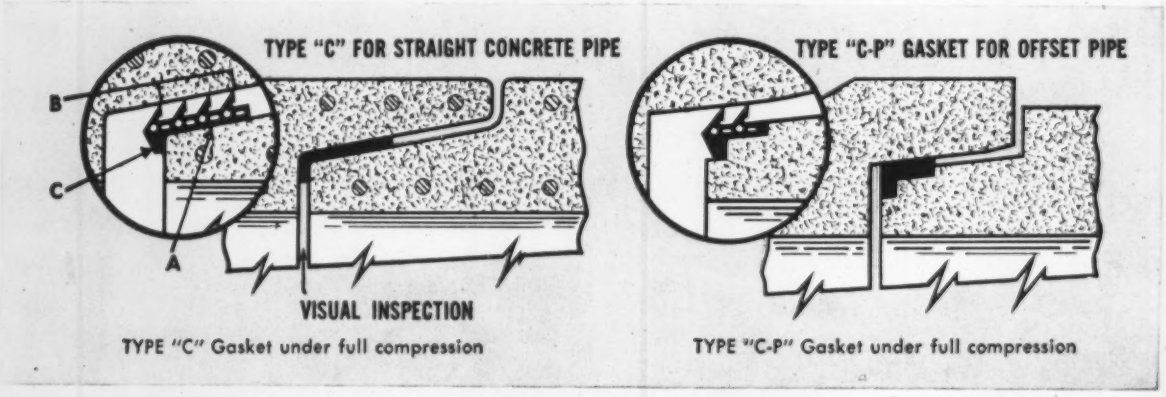

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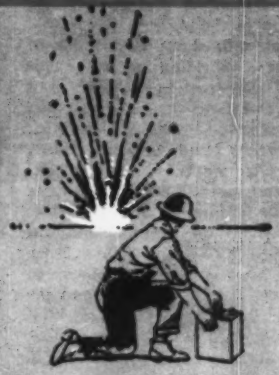

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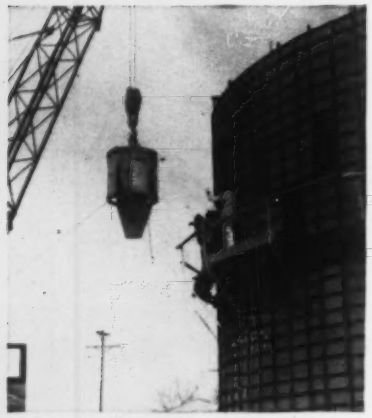

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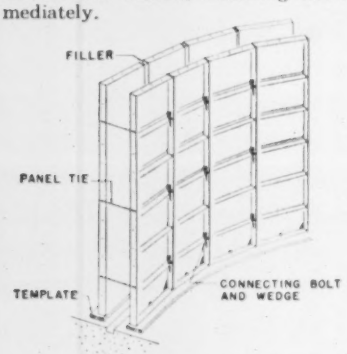

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two of college work? I believe it is because of a disillusionment on their part in a good many cases. We would be doing our students a service, and unquestionably civil engineering a service, if we gave the students an honest portrayal of what civil engineering really is, rather than something all dressed up and what it really is not.

In regard to "mundane," this is another word which was criticized several times. Again, I refer to Webster, who says, "of or pertaining to the world; worldly; earthly." If civil engineering is one thing when it is at its best, it is mundane. The civil engineer is first and foremost a practical man who is in and of this world. Civil engineer, be proud that you are mundane!

On this I shall rest my case. Show the embryo civil engineer the challenges of the "forest" of opportunities around him lest he be caught up in the "trees" of minutiae. If he does concentrate on the details, he will be the eminently qualified technician of tomorrow, but if he is educated to see the broad scope of civil engineering and be the "generalist" of engineering, he will be preeminent in the technological world.

SUMNER B. IRISH
Princeton University
Princeton, N. J.

Planning or Drifting?

SIR—Mr. Louis Tarnopoll asks the question in Reader Comment (ENR Aug. 6, p. 6), "Are we planning or drifting?" He has come quite close to pointing out the very areas that will provide the answer.

It is not enough to take a "good look" at the things that make up a city and say that these dictate the solutions proposed in the Master Plan. This, in effect, is "drifting."

It is not enough just to wonder why utilities are "dug out frequently" from the streets, or why people drive large cars instead of using a commuter's ticket. Wondering without action is again, "drifting."

What I think Mr. Tarnopoll is driving at is that the engineer, or whoever is engaged in planning, must both think and act. The planner of the city of the future must also understand the politics, finances, and above all the interrelationships of these two functions at the city and state level.

Finally, if the engineer, planner or architect is to plan, he must have vision, which is attainable, understandable and useful to society. He must in short dream, act and educate the people.

It is only through action that will gain the respect of those who make decisions for our communities that the engineer or planner can start "planning" and stop "drifting."

F. A. ECKHART, JR.
City Planner
Titusville, N. J.

New Type of Joints

Sir—I read with interest and a degree of satisfaction the article entitled "Even the Kitchen Sink Helped" (ENR May 28, p. 44) because of the part about the new type of joint that was used in the concrete pavement of the Santa Maria landing strip in the Azores.

The article tells about the forming of the joint by a vibrating tee bar. This method of constructing a joint in a concrete runway was suggested by yours truly and approved by the Air Force for use at Hanscom Field, Bedford, Mass., where the Air Force Cambridge Research Center resides, over three years ago, without fanfare. I thought it was a good way to do the job and not necessarily original.

That section of concrete pavement was 4,700 ft long, 200 ft wide, and the joints were placed on a 25-ft grid, and made as described in the ENR article. The only difference was in the thickness of the joint. The Hanscom joint was $\frac{3}{8}$ in. wide whereas the Santa Maria joint was $\frac{1}{4}$ in. wide. The wider joint was found to be easier to fill with joint compound.

Had sawing been required, that operation alone would have taken the 99 days that the entire job took, and random cracks would have been the order of the day.

I am glad that another engineer has found that sawing joints is a costly, delaying and obsolete way of forming a joint in concrete. The Hanscom job had no wandering or random cracks from shrinkage nor has it produced any other kind of crack since its construction (or I would have heard about it).

When I stopped at the Azores this summer I hadn't read the article in ENR and didn't know that the runway was constructed with the Hanscom-type joint or I would have made an inspection trip and taken the cost of the trip off my income tax.

JOSEPH L. PALEY
Consulting Engineer
Boston, Mass.

For Your Calendar . . .

National Building Materials Distributors, annual convention, Edgewater Beach Hotel, Chicago, Ill., Nov. 16-18. Write: D. B. Richardson, Richardson Lumber Co., Denver, Colo.

Structural Clay Products Institute, silver anniversary convention, Greenbrier Hotel, White Sulphur Springs, West Va., Nov. 16-18. Write: Structural Clay Products Institute, 1520 18th St., N. W., Washington 6, D. C.

Building Research Institute, fall meeting, Shoreham Hotel, Washington, D. C., Nov. 16-19. Write: National Academy of Sciences, 2101 Constitution Ave., Washington 25, D. C.

American Institute of Steel Construction, annual meeting, Boca Raton Club, Boca Raton, Fla., Nov. 30-Dec. 3. Write: L. A. Post, AISC, 101 Park Ave., New York 17, New York.

Paper and Paperboard Industrial Waste Conference, Edgewater Beach Hotel, Chicago, Ill., Dec. 1-2. Write: Russell L. Winget, Executive Secretary, National Council for Stream Improvement, Inc., 271 Madison Ave., New York 16, N. Y.

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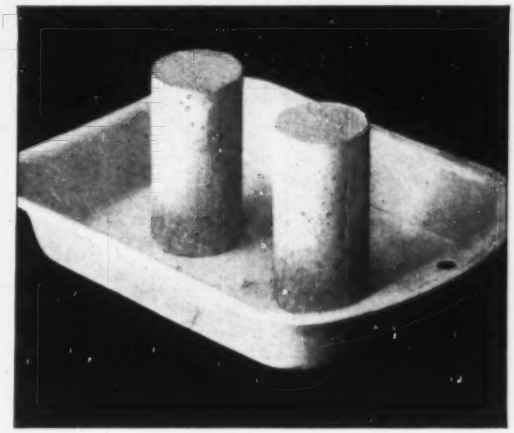
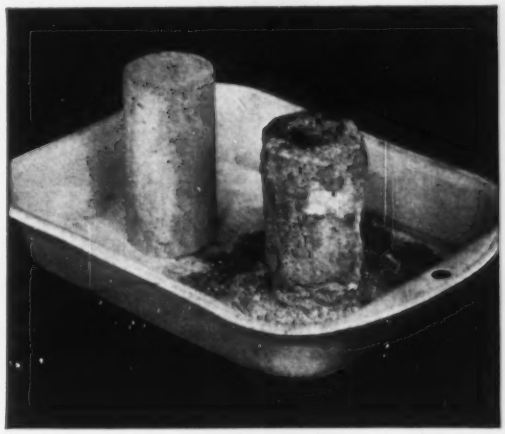


To compare the durability of Brixment mortar and ordinary cement-and-lime mortar, make a cylinder of each, let them "cure" for a month, then freeze and



thaw them for forty or fifty times, with a little water in the pan (the freezing unit of your electric refrigerator will do). See the difference with Brixment mortar!

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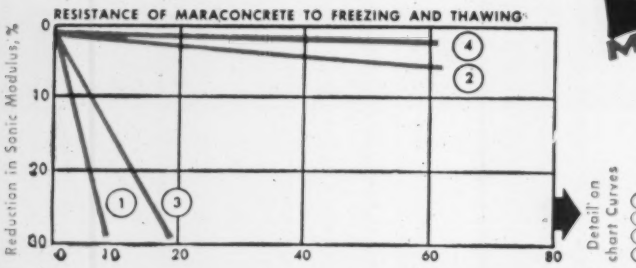

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III	None	7¼	5.1	1.1	3
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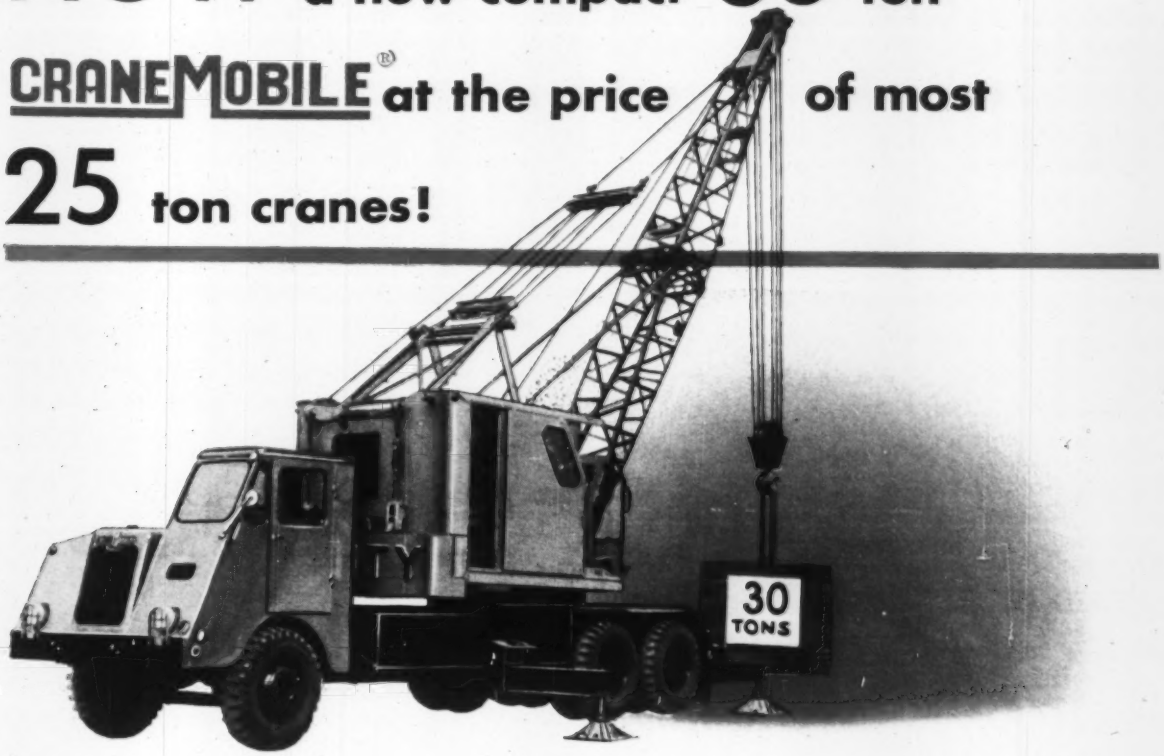

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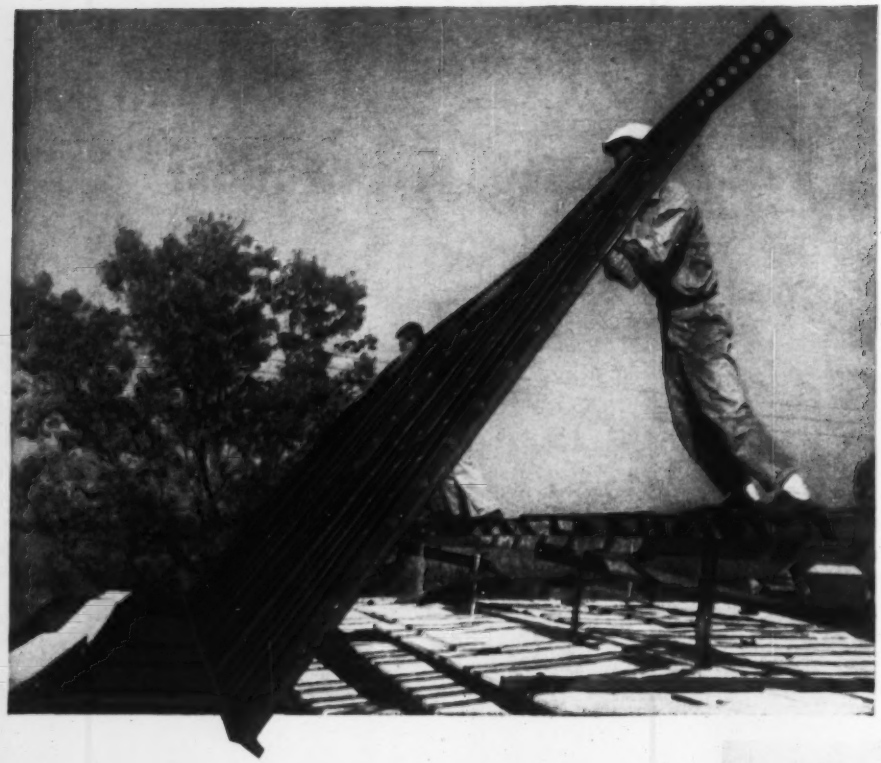

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Write for details of this highly efficient framing system. Ask for catalog SS-27.

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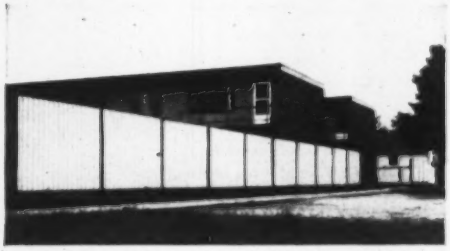

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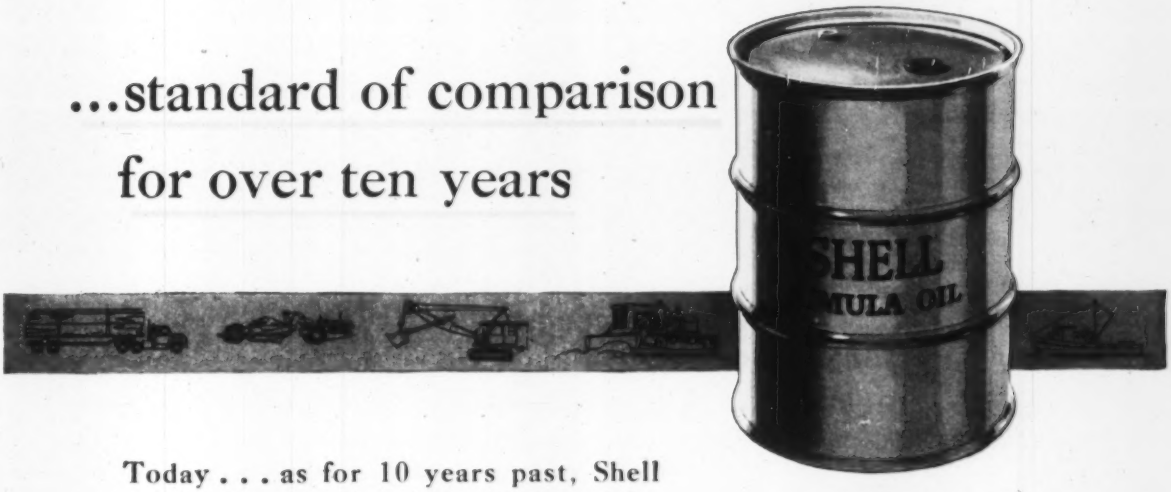

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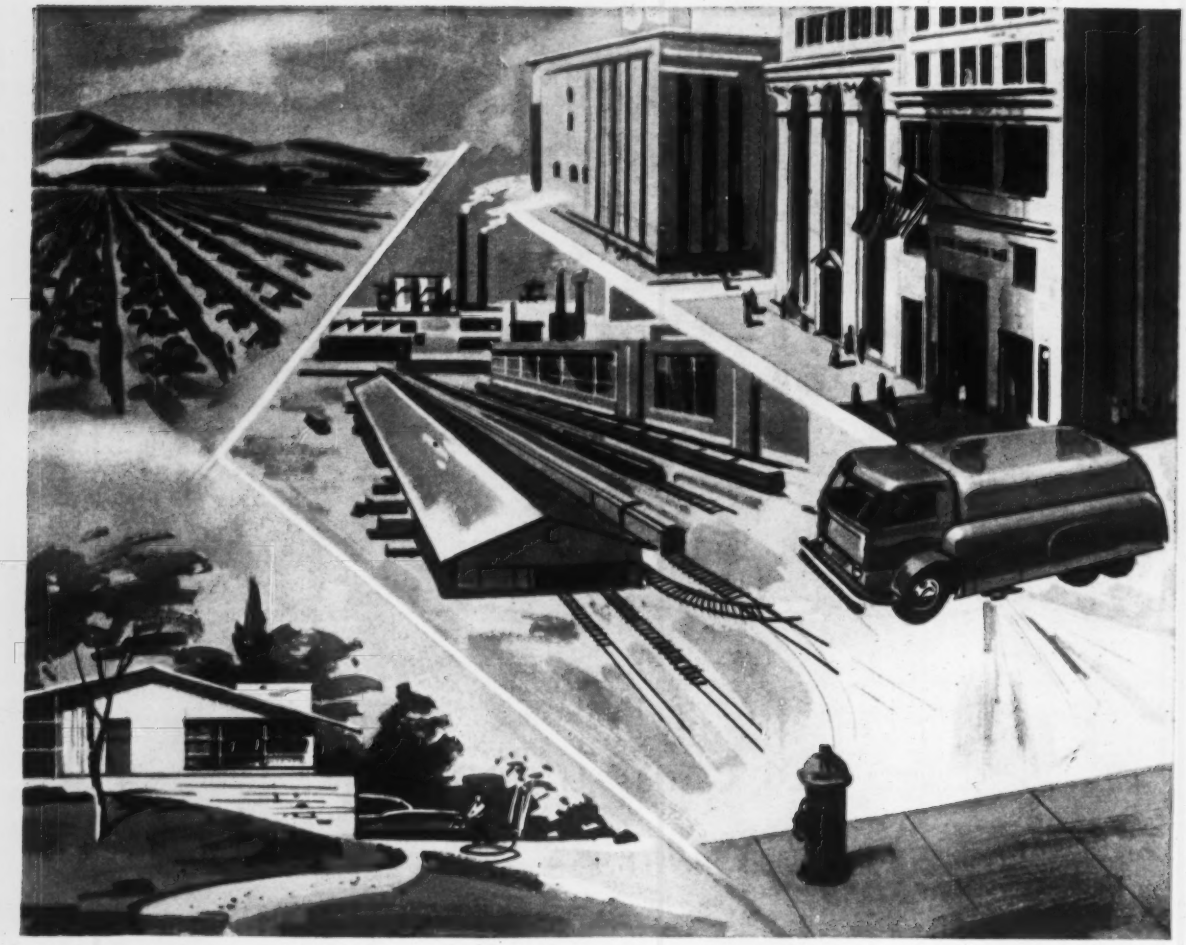

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

GOT A MILLION-DOLLAR IDEA?—New York City's Triborough Bridge and Tunnel Authority is looking for the least expensive method to sink a deep foundation in New York Harbor. The job involves main pier foundations for the Narrows Bridge, which will link Brooklyn and Staten Island. The authority suggests caissons installed by the floating or sand island method. But this would cost $18 million. Reason: Caisson for the Brooklyn pier will have to go down 200 ft or more. Bid opening is December 2. Contractor with the best idea is likely to win.

MORE EXPENSIVE MONEY—You can expect borrowing costs to move up another notch when the steel strike ends. Recent slight easing in rates results from dip in demand for funds by metal industries and all those dependent on steel.

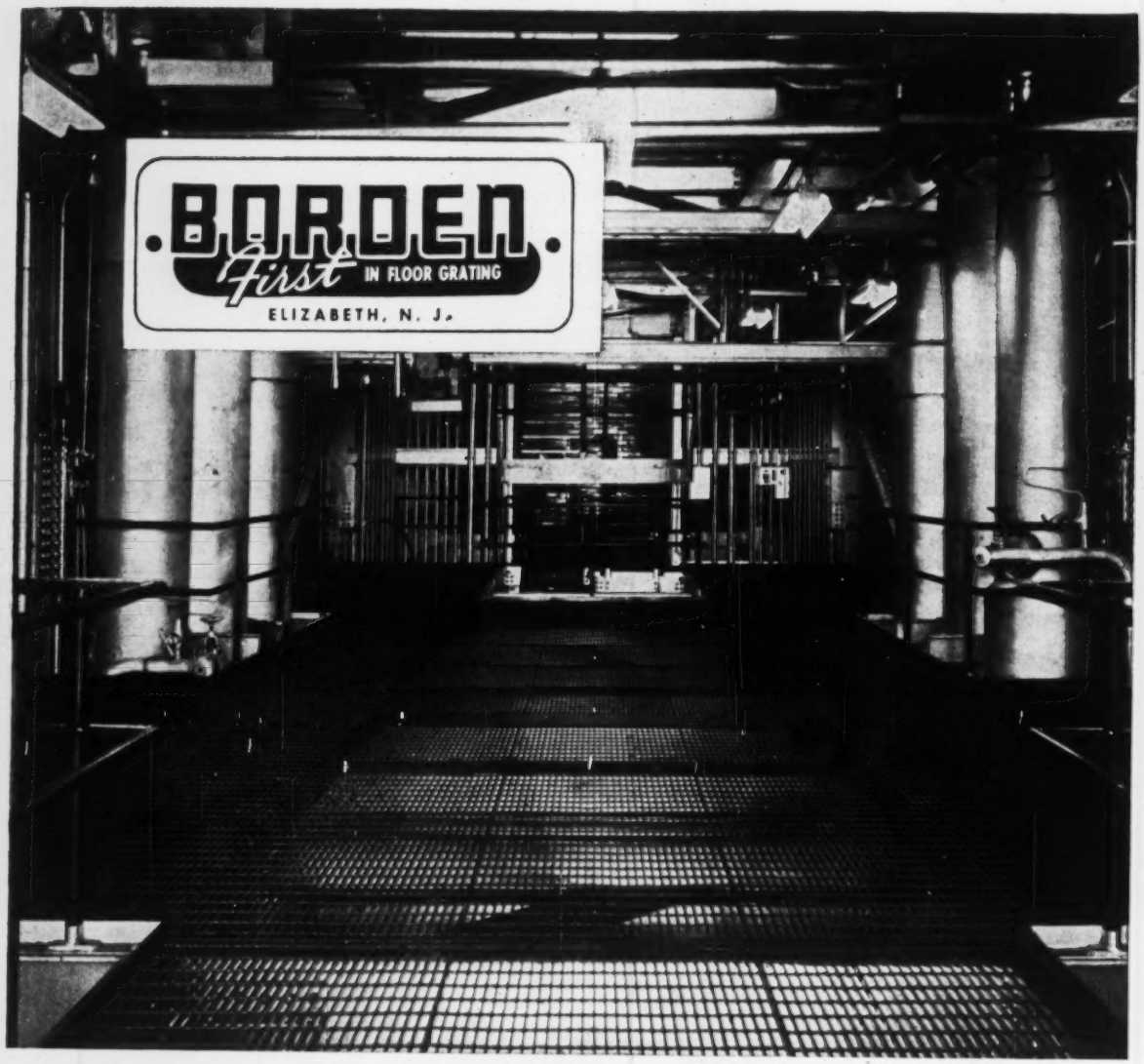
TRIMMING SAIL—California will have to cut back its highway spending next fiscal year by $41.5 million. That's despite a $33-million increase in revenue from state auto-use taxes. Reason, of course, is that federal aid will be off some $74 million from this year. Total highway budget will be $569.2 million—$452.8 million of it for construction, including right-of-way.

BIG SPENDING ON THE OHIO—A $4-billion, 20-year program of navigation improvement, flood control and water storage projects is needed for the Ohio River Valley, says Lt. Gen. Emerson C. Itschner, the Army's Chief of Engineers.

'SUBSIDIZED' HOUSING IN '60?—Pressure will build in Congress next year for government support of FHA and VA home mortgages if tight money severely crimps starts. Rep. Albert Rains (D., Ala.), of the House subcommittee on housing, is already pushing the idea. In 1958 Congress provided a $1-billion VA-FHA mortgage prop that is generally credited with pulling the industry out of a deep rut.

ANOTHER COST HIKE—Rental rates for trucks hauling gravel, sand, crushed stone and clay will go up 30 cents an hour next month in California. The state Public Utilities Commission granted the increase to California Dump Truck Owners Assn., Inc.

MICHIGAN'S IN A HOLE AGAIN—Michigan contractors are jittery over a state supreme court decision voiding a new 1% use tax. Although all general construction payments are on schedule so far, there is concern about whether the pace can be maintained—the state faces a $100-million deficit. Because of the expense involved in stopping a job temporarily, the state will give priority to continuing $5 million in major construction under way, but $3 million in small alteration and repair jobs are almost at a standstill.



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WASHINGTON OBSERVER

- **White House dodges urban vs. rural road fight**
- **Aid for education is still a live issue**
- **Pentagon cancels $40-million IRBM base**

● **The White House is staying out of the urban vs. rural highway issue, at least for the time being.** The basic question is whether too much of the tax dollar is going for city mileage. And that's a question Maj. Gen. John S. Bragdon, the President's adviser on public works planning, has decided is too hot to handle.

General Bragdon is looking into ways of getting more highways for the federal dollars put into the program. The issue of waste and over-designing of roads came up when Congress voted the extra one-cent-per-gallon gasoline tax.

Originally, President Eisenhower was reported to favor more emphasis on roads linking cities and less on the more expensive urban roadbuilding. But the states are sensitive to any increase of federal authority in such matters. So the Bragdon group will skirt the issue in its report next spring.

—

● **Backstage dickering on federal aid for education is going on in Washington between Democratic Congressmen and Administration officials.**

The Administration adheres to the basic premise that any federal aid has to be financed over a period of 20 to 25 years—to avoid any sudden budgetary upheaval.

Democrats still want a big program of grants. The sums are open to negotiation but the current talk involves at least $1 billion or so a year.

Indications are the Administration will make one minor concession—modest grants during the first two years for school districts bumping against legal debt ceilings.

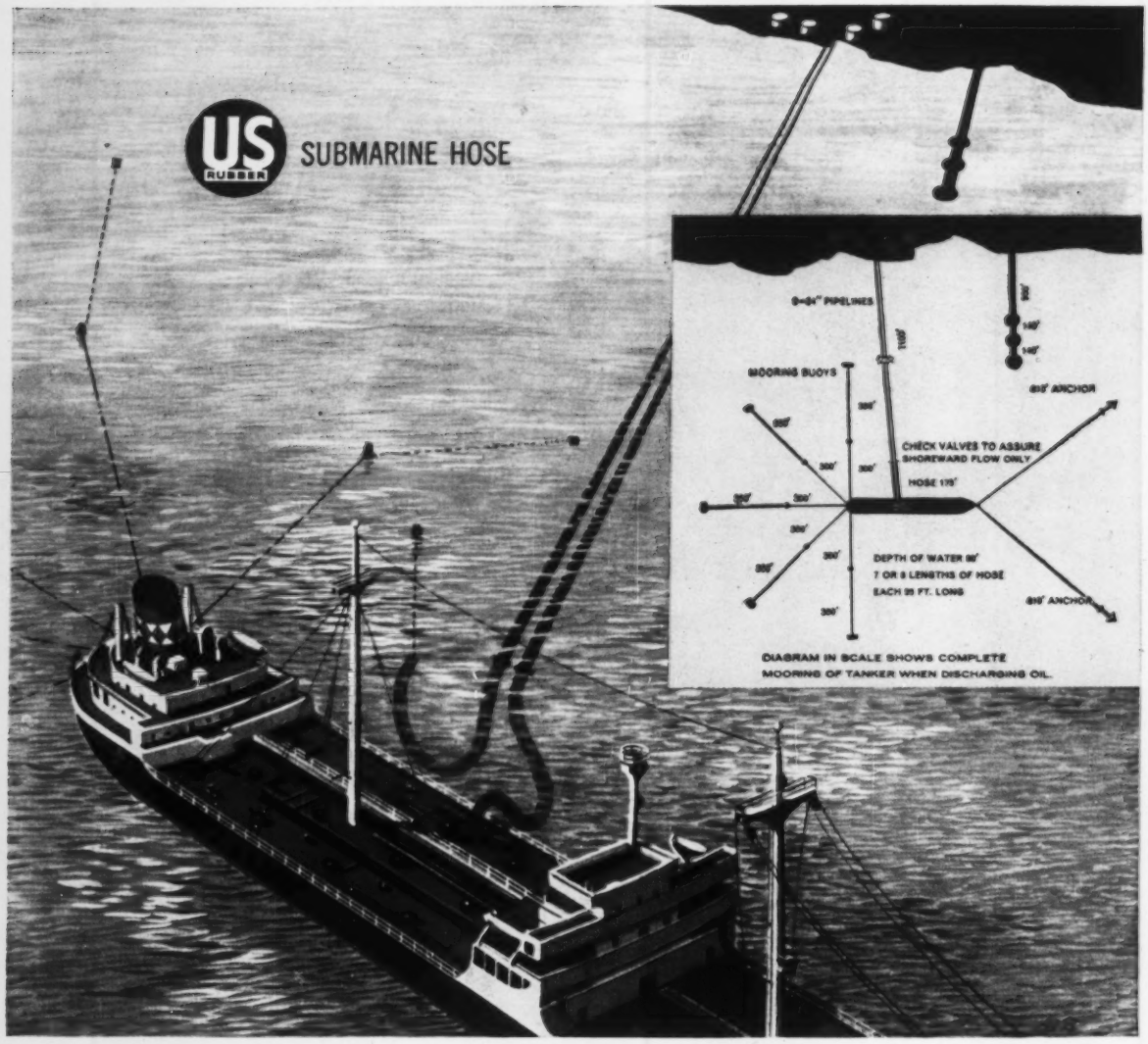
A tug-of-war inside the Administration evidently is in progress. Both Arthur Flemming, Secretary of Health, Education and Welfare, and Bertha Adkins, his under secretary, are quietly pushing for some slight liberalization of the White House position on the issue.

Prospect for legislation in 1960 is still dim. Proponents of federal aid are encouraged by the attempts to reach a political compromise, but they feel the chasm separating Democratic and Republican approaches is too wide to be bridged in the coming session.

—

● **The Pentagon has knocked out plans for an overseas Thor IRBM base that probably would have been built by a U. S. contractor.** Construction costs for the base would have come to about $40 million, including support facilities. Initially the base was planned for France, West Germany or Greece. But the U. S. failed to negotiate agreements.

Meanwhile, it looks as though a U. S. contractor will be hired to build the recently negotiated Jupiter IRBM base in Turkey. The U. S. will also finance the Turkish base. The Western defense system also includes bases in Italy and in Great Britain. The Italian Jupiter base is being built by U. S. contractors and paid for by the U. S. Great Britain is financing and building her Thor bases.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Is Pump-Priming Out of Date?

- **Born in the depression and revived in every business slump since, federal pump-priming has been a big source of construction funds.**
- **Now the whole idea is under critical re-evaluation.**
- **No one expects lower government spending for construction. But the manner in which U. S. money is spent may change.**

Washington is taking a long, cool and critical look at the idea of federal pump-priming—long a favorite anti-recession weapon and an important source of construction dollars. What the economists think and say now is likely to have a major effect on what political leaders think and say tomorrow. That inevitably will lead to changes in how much—and how—the government spends for construction.

For six years under President Eisenhower—beginning with fiscal 1953 and running up to mid-1958—federal expenditures for public works stayed close to the $5-billion-per-year mark. This fiscal year they are running close to $7.2 billion—a 44% jump over the old level. Spending will probably rise a little more next year.

As far ahead as experts can see—and they have made careful estimates running 10 years ahead—they discern no downward trend for federally financed construction. Almost to a man, the forecasters see a gradually rising total as the country struggles to catch up with its needs in public works.

But a fundamental change may be at hand in the way Congress votes the necessary money—a change that could contribute a great deal to the stability of the construction industry.

Funds for construction have grown over the years, but in sporadic leaps, in response to emergencies of one kind or another. The gain of almost 44% from fiscal 1958 to the current fiscal year is a case in point.

After hovering around the $5-billion mark for so many years that it seemed almost a permanent ceiling, public works spending by the federal government jumped $2.2 billion.

This jump in construction spending was due to the reaction of the Administration and Congress—mostly Congress—to the recession of 1957-58. The Administration, which had been keeping a tight lid on construction expenditures for years, took the lid off. The flow of funds to construction projects was stepped up by a series of administrative orders from the White House.

Congress reacted even more strongly, and rushed through increased appropriations. Lawmakers were convinced that priming the construction pump was the best of all ways to halt the recession and start the economy growing once more. Words of caution from the White House and from the conservative wing of the Democratic Party were brushed aside as lawmakers of both parties rushed to expand public works spending.

All this was in the political tradition that began in the depression years of the 1930s under President Franklin D. Roosevelt. In those years, pump-priming became enshrined as the proper political reaction whenever business slowed down and unemployment rose.

There are signs, however, the Congress may not react this way the next time a recession develops. Certainly the pump-priming rush of 1957-58 will never be repeated if Congress heeds the advice of some of the country's most eminent economists.

The scholars have been called in to testify before the Joint Economic Committee of Congress. It is making an exhaustive inquiry into the nature of the U. S. economy, how it is operating, where the chief inflationary perils lie, and how growth can be stimulated without inviting price rises.

But a common theme in their testimony is that the day of pump-priming is past, that it is a crude and inevitably poorly timed device to use against recessions, and that it should be toppled from its shrine in U. S. politics.

Richard A. Musgrave, professor of political economy at Johns Hopkins University, told the committee last week that he is opposed to "hastily contrived make-work projects" when the business cycle turns down. He recommended legislation that would give the executive department latitude to expand or slow down the flow of funds to long-range construction projects. But he is against Congress' trying to counteract the business cycle either by increasing spending when business slumps, or decreasing it when business booms.

Mr. Musgrave also chided Congress for looking at economic growth almost wholly in terms of appropriations for construction. He favors spending more for research and education.

Alfred G. Hart, professor of economics at Columbia University, is another who urged an end to pump-priming by act of Congress. He argued that "the idea of correcting or forestalling fluctuation in business by manipulating government expenditures should be de-emphasized."

"A good example of trying to get too smart in this direction," Mr. Hart told the committee, "is the expenditure program adopted to help against the recession of 1958, which is bearing fruit too late to be helpful." He added that changes in the volume of highway work and contract-letting for light construction might be useful to counteract slumps, but he would stop there.

The case against pump-priming is being developed on the Republican side by the Cabinet Committee for Price Stability and Economic Growth under the leadership of its chairman, Vice President Richard M. Nixon. Last week Mr. Nixon released a committee report on the related problems of budget control, monetary policy and debt management that took a poke at Democratic-sponsored pump-priming actions.

The report argued that shifts either up or down in government spending take so long to affect the economy that "conditions when the changes take effect may well be the opposite of the conditions for which the changes were designed." In short, money appropriated to halt a recession in 1957 may be contributing to inflation in 1959.

The report touched in passing on an

idea that some Democrats have also been discussing recently: That if Congress were to exercise more restraint on government spending, thus easing the threat of inflation, the Federal Reserve could ease up on monetary restrictions, allowing interest rates to drop.

There are no recommendations in the new Nixon report, but recommendations will follow later. They will also most certainly make a case against pump-priming.

It is unlikely that such views—though they are widely shared among professional economists—will capture Congress overnight. But the idea has been planted and seems likely to take root between now and the next business downturn, no matter which party controls Congress. Pump-priming will run into stronger opposition next time, and possibly other anti-recession policies, such as tax cuts, will get a friendlier hearing than in 1957-58.

All this, of course, should be assessed in light of this underlying fact: Federal construction is bound to rise over the next decade and possibly much longer.

The decline of pump-priming will not mean a decline of U. S. dollars for construction. It could, however, mean a smoother, more dependable flow of funds as construction loses its charm as the main bulwark against fluctuations in the business cycle.

Steel Pinch: Road Program Hard Hit . . .

The steel strike has had a telling effect on the nation's highway program. Some 193 projects with a total value of more than $200 million had been disrupted to some degree as of October 13, according to a Bureau of Public Roads tally.

Here's the situation on federal-aid highways—Interstate and ABC—as reported to BPR by the states:

- 58 projects worth $45.9 million had come to a stop.
- 122 projects worth $158.4 million were delayed.
- Six projects worth $8.5 million were trimmed.
- Two projects worth $452,000 were left in hazardous condition.
- Four projects worth $8.1 million had to be redesigned.
- Advertising was delayed on one project worth $1 million.

That's as of the middle of last month. Last week BPR called for a new assessment, results of which should be available soon.

BPR rates a project "delayed" when going work is slowed down; "trimmed" when the over-all job is reduced in concept—some work dropped out; "hazardous" when work left partially completed presents a physical danger (such as half-built bridges and overpasses); "redesigned" when states turn to substitutes (structural concrete for structural steel, concrete paving for steel mesh).

The big question worrying states now is how long it will be after the mills go back into production before they can get deliveries. Some steel suppliers predict a wait of two to three months.

But supplies will probably be short for at least six months; all industry is hurting for steel by now.

First priority will go to the sizable backlog of defense jobs. One estimate is that it will take at least two months to fill those orders.

Government officials do not now plan to set up any type of allocation or priority rating for steel going to industry—there is little chance that they will.

Some observers think states may be forced to design away from steel for the next couple of months.

The pinch is focusing more attention on imported steel. BPR reports the use of foreign steel has climbed in the past few months, but it doesn't know exactly how much.

Although the shortage is now nationwide, there were eight states that reported no work interruptions on either Interstate or ABC construction as of the middle of October. They were Massachusetts, Florida, Tennessee, Louisiana, California, Nevada, Idaho and Oregon.

Seven states reported no delays on Interstate work, but some interruptions on ABC jobs. They were Rhode Island, Vermont, Maryland, Virginia, Mississippi, North Carolina and Montana.

Six states reported the opposite—no slowdowns on ABC jobs, but interruptions on the Interstate. They were Iowa, Missouri, North Dakota, South Dakota, Arizona and New Mexico.

. . . So Are Other Major Jobs

Steel-hungry contractors are slowing work or closing up shop on major construction jobs across the country in the wake of the longest steel strike in history.

Among the important jobs slowed is the Navy's $79-million radio telescope near Sugar Grove, W. Va.

In Tullahoma, Tenn., the Corps of Engineers plans to halt construction this week on a propulsion wind tunnel at Arnold Engineering Development Center. Pittsburgh-Des Moines Steel Co., prime contractor on the project, has 170 men on $21.6 million worth of work there.

The steel shortage is also holding up other aeronautical testing facilities at the Air Force center. Though the center is high on the defense priority list for steel, a spokesman for the Corps of Engineers expects to wait 30 to 45 days for steel after the strike ends.

In Michigan, the steel strike forced redesign of a million-dollar viaduct on a Grand Rapids expressway. The contractor—Owens-Ames-Kimball Co. of Grand Rapids—will use concrete on 14 of the structure's 25 spans because "the entire job would have been closed if the switch had not been made."

The California Division of Architecture held up a call for construction bids on state office buildings in Sacramento and, ". . . will continue to hold back projects we had planned to call for bids on until the steel situation clears up." About $18.3 million in office buildings are involved.

Some of the $139 million in California building projects under contract are also delayed. Among them is a $22.5-million building at San Fernando State College near Los Angeles that will require 40,000 tons of steel in the current fiscal year.

In New Orleans, start of construction on a $21-million post office building may be delayed.

In New York City construction on the new lower deck of the George Washington Bridge is now halted and the Throgs Neck Bridge will soon be affected. Road officials fear that a huge road-and-bridge program for the metropolitan area—involving $800 million in projects—may soon be hit. Work in progress or about to be started could be set back 6 to 12 months. Also in New York City, steel erection on the upper floors of the Equitable Life Assurance building is delayed.

Mammoth Pool Dam Topped Out in Sierras

Bechtel Corp. has topped out Southern California Edison's Mammoth Pool Dam on the San Joaquin River. It took 16 months to bring the rolled earthfill to its design height of 330 ft.

Still under construction for the $48-million project are an eight-mile power tunnel and a 129,000-kw powerhouse.

Mammoth Pool is part of Edison's Big Creek-San Joaquin power development, high in California's Sierra Nevada range. The utility's investment there, including Mammoth Pool's share, totals $212 million so far.

Another Tunneling Record Set in Snowy Mountains

For the second time in the space of a few years, tunnelers on Australia's huge Snowy Mountains hydropower and irrigation project have set a speed mark.

Thiess Bros. Proprietary Ltd., contractors on the nine-mile Tooma-Tumut Tunnel, advanced a 12½-ft horseshoe-shaped heading through biotite granite 526 ft in six days—87.7 ft a day average.

The previous record for tunnels of comparable size was 83 ft a day, set last year by the joint venture of Drake-Grafe-Winston-Tecon-Conduit in New York City's 13½-ft West Delaware Tunnel (ENR June 26, 1958, p. 28).

The Snowy Mountains were also the scene of an unprecedented pace in a bigger tunnel—24 ft—in 1955. Kaiser-Walsh-Perini-Raymond, an American joint venture, drove 402 ft in six days. That record still stands, but it came close to toppling early this year when Utah Construction Co. advanced a 21-ft heading 390 ft in six days in the Mammoth Pool power tunnel in California (ENR Feb. 12, p. 23).

The Thiess firm is using the burncut method of tunneling, developed by the Drake group on the West Delaware Tunnel. Drake eventually settled on a single unloaded 8-in. hole at the center of the drill pattern. Thiess is using two 5-in. holes.

Thiess' drill pattern comprises 34 holes 1⅞ in. in diameter, 11½ ft deep. Advance per round averages about 10.1 ft. Powder consumption (60% dynamite) runs about 5.3 lb per cu yd of rock.

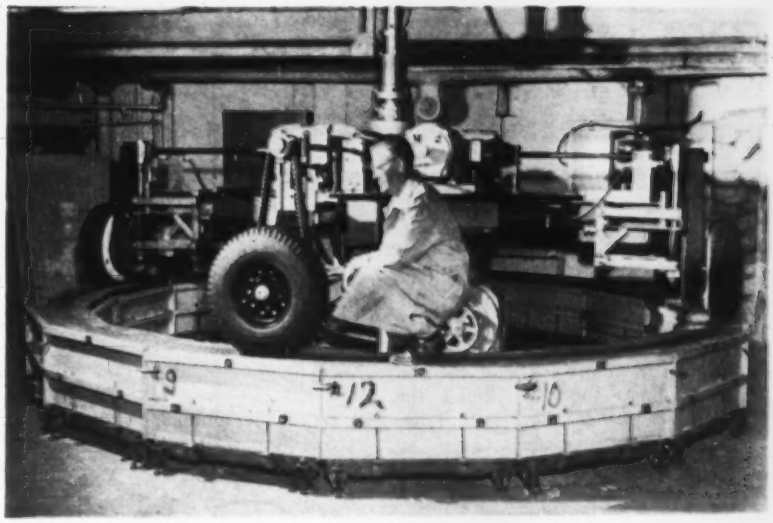
Slippage Caused Accident On Salt Lake RR Causeway

Slippage of earth under railroad tracks on the eastern approaches of the 13-mile earthfill railway causeway across the Great Salt Lake caused the derailment of a diesel locomotive and eight freight cars in September. That's the report of Southern Pacific Railroad officials.

For several days after the derailment of part of the 88-car train, an old wooden trestle was the only railway route across the lake. Southern Pacific officials say the derailment did not change any plans for dismantling the trestle.

Fill slid away from the $49-million earthfill causeway five times during its construction.

One slide carried away 2,200 lin ft of fill, about 2 million cu yd (ENR Aug. 28, 1958, p. 23). Several sections of the 32.5-million cu yd fill were rebuilt on wider bases.



Heavy Tests on a One-Foot Road

A miniature indoor "motordome" is taking on traffic loads as heavy and varied as any highway 24 hours a day, day in and day out.

Object: Development of longer lasting, smoother and safer asphaltic roads.

The test-tube highway is a 44-ft circular roadway 12 in. wide. It was developed by the research laboratories of the Standard Oil Co. (Indiana) near Chicago.

Whenever the company comes up with an improved paving formula it puts it on the indoor test road. There the effects of years of use and weather changes can be reproduced in days.

Four automobile wheels speed around the paved track. They are mounted on a variable speed spindle and can be adjusted to simulate the weight of anything from a bicycle to the largest over-the-highway truck.

During tests, wheel weights are varied at will from 350 to 1,500 lb each. Wheel speeds go to 40 mph.

Motors on the rotating turntable apply an additional driving force to two wheels and a retarding force to the other pair. This is usually a torque of 180 ft lb per wheel. As much as 360 ft lb can be applied for short periods to approach jack-rabbit starts and panic stops.

Automated equipment rapidly changes roadway conditions from desert-dry heat to humid heat, into a cloudburst, and on into freezing, thawing, freezing and back to heat again. Effects of traffic are observed and recorded electronically.

The miniature roadway permits testing 16 kinds of road at the same time. Each test slab is 1 ft wide and 3 ft long. It has a clay subgrade that is normally covered by a dense rock base, an asphaltic leveling course and a blacktop surface.

Miniature machines lay down finished pavements 1½ to 3 in. thick the same way big asphalt finishing and compaction rigs do actual roadbuilding.

The testers even go so far as to reproduce roadway hardening and softening from the sun's rays. Hardening, resulting from oxidation induced by solar radiation, is hastened by exposing the pavement to ultraviolet light. Infra-red lights are used for heat softening.

The motordome was devised by Tom L. Speer, a senior engineering research supervisor for Standard. He thinks of his machine as a supplement to the AASHO test road near Ottawa, Ill.

Mr. Speer predicts that savings in highway research costs alone may run into millions with this new machine; more will be saved in actual construction.

Since the laboratory conditions can be tailor-made, Mr. Speer says, pavement specifications can be made to order—and tested—for roadways anywhere in the world, before a cent is spent on construction.

GSA Invites Bids on House Office Building

The General Services Administration invited bids this week on superstructure work for the third House Office Building in Washington, D. C.

The bids should pretty well determine the project's final cost, which was estimated two years ago at $66 million.

Capitol planners still use the two-year-old figure, but there may be some rapid recalculations when bids are opened in January.

Spent so far: $8.3 million for foundations, $6.9 million for structural steel and $1.4 million to contain a stream crossing the site.

Trinity Sewage Plant Finished

It's the first project in a master plan developed under an unusual setup—local planning and sponsorship

The first locally sponsored comprehensive river-basin development program in the U.S. reached a milestone this week. Texas' Trinity River Authority started operation of a $7.7-million sewerage system and sewage treatment plant in suburban Dallas, the first project to be completed under the TRA master plan for the Trinity Basin.

The Trinity watershed covers an 18,000-sq mi area including Fort Worth and Dallas. The master plan takes federal participation into account, but the plan itself was instigated and paid for by local interests (ENR Sept. 4, 1958, p. 26). Forrest & Cotton of Dallas are the TRA's consulting engineers.

Major features of the program are 28 dams on the Trinity and its tributaries. The state-created Trinity River Authority expects to build 19 of them. The Corps of Engineers and specific cities would build the other nine.

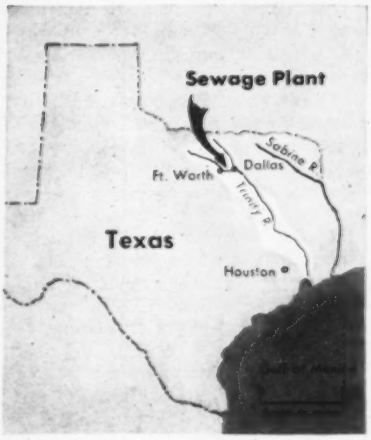
The new sewerage system and plant serve about 100,000 people in West Dallas and the suburban towns of Grand Prairie, Irving and Farmers Branch. Design is based on a population of 240,000 with expansibility to accommodate 800,000.

Sewage enters the treatment plant through two 7-ft-wide bar screens and is pumped to two 220-ft-dia primary settling tanks. From there primary sludge goes to thickeners, then to digesters. Effluent goes to four 210-ft-dia high-rate trickling filters. Half the filter effluent is recirculated, the other half goes to oxidation ponds. Part of the pond effluent is recirculated to the filters, the remainder is chlorinated and discharged into the river.

The plant is located on a 300-acre site on the Trinity River flood plain. Encircling levees will protect it from high water.

While the number one project was getting into operation, other parts of the master plan were showing signs of life:

- **Cedar Creek Reservoir**—Ft. Worth will hold a public referendum December 2 on a $55-million bond issue for this proposed water-supply project.
- **Rockwall-Forney Reservoir**—Dallas has voted one bond issue for part of this $29.2-million water-supply project. Another issue will be required later. Land surveys now under way will take another three years to complete.
- **Navarro Mills Reservoir**—Congress appropriated nearly a million dollars in 1959 for this $8.9-million multipurpose development. The Corps of Engineers expects to start work in a few months.
- **Livingston Reservoir**—A big bone of contention between Houston and the TRA, this $30-million project may be in the clear soon. Public hearings start this week on a joint application by Houston and the TRA to build the reservoir. They originally sought permission separately. The root of the trouble has been that Houston lies outside the Trinity watershed and hence roused objections when it proposed to divert Trinity water for use in the city.



FIRST PROJECT in basin-wide master plan starts operation near Dallas.

Houston has also sought permission to build a $10-million salt water barrier below Livingston at Wallisville. This would include navigation locks and a flood diversion channel. The barrier is needed to conserve the yield of the proposed Livingston Reservoir. Without the barrier, releases from Livingston would be needed downstream to cut down on salt water intrusion.

Another interwatershed transfer figuring heavily in Trinity area development, but not in the TRA master plan, is well along. Dallas expects to complete its $33.5-million Iron Bridge Reservoir in about a year. This will divert about 160 million gallons a day from the Sabine River watershed to Dallas.

New York Is the Fairest of All

The selection of New York City as the site of the 1964 world's fair will give builders a location already graded, landscaped and equipped with building foundations, sewer and water lines and other utilities.

The 1964 fair will be held at Flushing Meadow Park, Queens, the site of the New York World's Fair of 1939-1940.

Utilities in place at Flushing Meadow would cost from $40 million to $60 million to construct today, say New York City officials. But the consensus of some builders who took part in the 1939 fair construction is that the facilities are worth only about $25 million.

Private industry, cities, states and nations are expected to spend some $350 million to set up exhibits at the fair. The New York World's Fair 1964 Corp., the fair's organizing committee, will spend $150 million on streets, sanitation, buildings, policing and other needs. An additional $85 million from New York City will go for highways and transit system construction.

Architectural plans for the forthcoming fair have not yet been drawn up, says a spokesman for the fair corporation.

By contrast, the backers of Washington, D. C., as a site for the 1964 fair offered a basic layout designed by Victor Gruen, New York City architect and city planner.

Washington's plan called for construction of the fair buildings on a series of 14-ft-high concrete platforms within a 600-acre circular area. The Washington fair installation was designed to be used subsequently as a permanent city that might house as many as 100,000 persons.

Many of the Flushing Meadow foundations can be used again. Because the location of the 1939 fair was originally a swamp and land fill, pile foundations were used for most structures. These are now buried just below the surface.

The New York City Building still stands on the site of the previous fair. It was used by the United Nations as a temporary headquarters.

The earlier fair covered 1,216 acres and cost $155 million. Several hundred contractors and subcontractors employing as many as 3,000 persons worked on the exposition. The forthcoming exposition will use more space than the 1939 fair employed.

Kaiser is in the news as a steel producer but . . .

It All Began With a Paving Contract

Kaiser Steel Corp., the company that cracked the steel industry's united front labor contract negotiations, is only one segment of an industrial empire that grew out of a street-paving contract.

Henry J. Kaiser's empire stretches around the world in the form of big construction jobs, factories, mines, laboratories and a hotel. It turns out 300 products ranging from household aluminum foil to dams and steel mills.

With $1.7 billion in assets and $1 billion annually in sales, the Kaiser complex takes in 51 companies, subsidiaries and affiliates operating 91 major plants.

Cornerstone of the empire is the Henry J. Kaiser Co., founded by Mr. Kaiser in 1914 when he was 32 years old. Today this company has engineering and construction projects in Australia, India, Paraguay, Brazil, Iran, Ghana, Vietnam, Taiwan and Canada.

Behind this vast complex is an energetic, 77-year-old construction wizard, who drives a pink Lincoln Continental in the early morning hours to the site of his new $350-million dream city in Hawaii, the Hawaii-Kai. After giving swift directions to his foreman, Mr. Kaiser returns to his office in the Kaiser-built and operated Hawaiian Village Hotel at Waikiki to work through lunch.

Although he recently relinquished the chairmanship of four major companies (including the steel company) to his 50-year-old son, Edgar F. Kaiser, the elder Kaiser remains the power behind the empire's operation.

Henry J. is still chairman of Kaiser Industries Corp., which has investments in the other Kaiser enterprises—in some, it owns 100% of the stock.

At the base of the Kaiser empire is construction. That first paving contract prompted him to leave a salesman's job and form his own company (with borrowed money and second-hand equipment). By 1921 his firm was the best known paving outfit in the Pacific Northwest. By 1923, a Kaiser sand company was supplying the Kaiser construction jobs. Last year the sand company rang up sales of $6.4 million.

The Kaiser fortune grew along with the Kaiser contracts. A $20-million subcontract for 200 miles of highway in Cuba pushed Henry J. into the big-time. He participated in construction of Hoover Dam (as chairman of the executive committee of the six-firm joint venture) and Bonneville, Grand Coulee and Shasta dams.

Well entrenched in construction by 1939, Kaiser branched out into other areas—first with Permanente Cement Co., then, during World War II, with his famous shipbuilding company. The steel company was formed for the specific job of supplying the needs of the ship company, as were the Kaiser magnesium plants.

Other major Kaiser manufacturing companies include Kaiser Aircraft and Electronic Division, Willys Motors, Inc., and Kaiser Aluminum and Chemical Corp., Kaiser Gypsum Co., Inc., and Kaiser Metal Products, Inc.

It is perhaps no accident that son Edgar's approach to peace with the steelworkers follows a labor relations pattern more familiar to construction than to steel **(see p. 105).**

"My father began trotting me around to his jobs when I was 10," says Edgar. "The habit of living with construction rubbed off on me."

School vacations found him working on construction jobs as messenger boy, water carrier and clerk.

Edgar left college two months before graduation for the chance to become construction superintendent on a pipeline that his father was laying from Texas to Kansas.

He intended to return to school, but one construction job followed another, each bigger and more inviting than the one before—boss of an excavation crew at Hoover Dam, administrative manager of Bonneville Dam construction, then Grand Coulee.

Although Henry J. remains the active decision-maker in the Kaiser domain, Edgar has worked with his father so long that, he says, he can anticipate many decisions.

Although Kaiser Steel is the company in the news, it's still the construction companies at the heart—and it's still building that occupies Henry J.

The Kaiser Engineers and Heavy Construction Divisions are among the country's largest engineering firms, with a current backlog of more than $300 million.

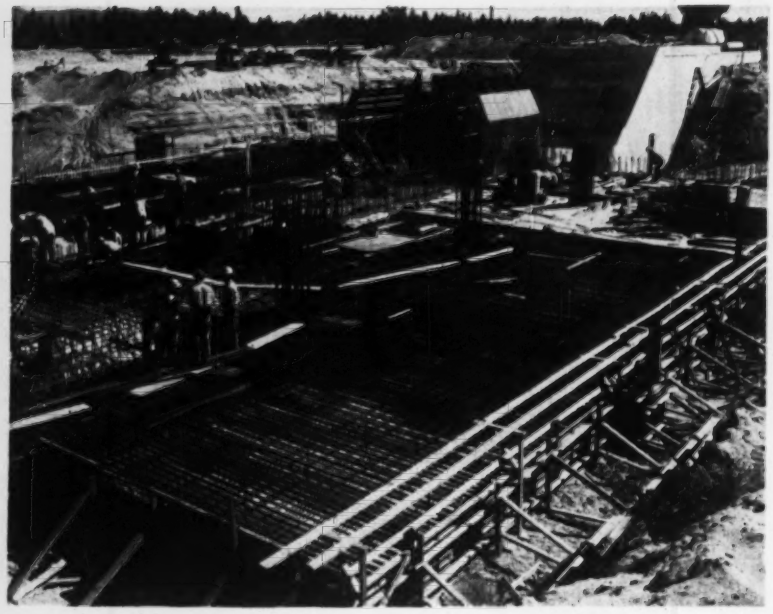
Recent or current projects of the two divisions include: Fontana, Calif., steel mill expansion, $214 million; Ravenswood, W. Va., aluminum plants, $195 million; India steel mill expansion, $150 million; Brazil steel mill project, $170 million; and Hanford, Wash., plutonium production reactor, $102 million.

The idea of building a resort center in Honolulu was developed by Henry J. Kaiser in 1954. With homebuilding partner Fritz Burns (working through the Kaiser-Burns Development Corp.), a vacation paradise of hotels was built fronting on a mile-long Kaiser-built extension of Waikiki Beach. The current Hawaii-Kai will house 50,000 persons on a 6,000-acre site above Oahu's graceful Maunalua Bay. It will be Hawaii's second largest city.

Mr. Kaiser's industrial development in Hawaii is the 1.7-million barrel cement manufacturing plant under construction near Honolulu.

Rolling a Hangar Out of the Way

To clear a site for a new civil air terminal building at Dharan Airport, Beirut, Lebanon, the contractor picked up a hangar, slipped wheels under it and moved it a quarter of a mile away. The new terminal, which is now under construction, is a joint venture of three U.S. firms—Oman Construction Co., Inc., Nashville; R. P. Farnsworth & Co., Inc., New Orleans; and Wright Contracting Co., Inc., Columbus, Ga. Minoru Yamasaki is designer.



Is It Steel or Concrete Work?

The reinforced concrete launching pads for Atlas missiles require so many steel bars that the pads seem to be more steel than concrete, as shown above. Bethlehem Steel Co. has delivered 500 tons of reinforcing steel to each of three Atlas missile bases ringing Spokane, Wash.

Back Again: Bering Strait Dam

A Soviet engineer has revived his proposal to build a dam across Bering Strait between Alaska and Siberia to warm the Arctic.

Pyotr Borisov's latest proposal, quoted by a Soviet publication, is largely a rehash of a lecture he delivered last year at Moscow's Polytechnic Museum (ENR June 26, 1958, p. 50). But this time he suggests the project as a giant international cooperative. Under sponsorship of the U. S. and the U. S. S. R., all northern hemisphere countries would take part.

The dam would run 43½ miles, from Siberia's Chukchi Peninsula to the Alaska coast. It would be equipped with huge pumps to move frigid Arctic water southward into the Pacific and draw warmer Gulf Stream water into the Arctic Ocean from the Atlantic. As a result, average temperature at the North Pole would rise 60F. This would open up the polar region for agriculture and other development and would make the rivers of Canada, Alaska and Siberia navigable all year.

As Mr. Borisov sees it, the dam would cost $17.5 billion. It would be made of concrete. Pontoons would be prefabricated on shore, floated out and sunk in place.

He envisions several alternate sources of power for the pumps: gas from the Lena River Basin in Siberia; gas, coal and oil believed to exist in frozen regions of Alaska and Siberia; and floating atomic power stations.

Sen. Ernest Gruening (D., Alaska) says he will ask Congress to study the idea.

Big Loan Pushes Start on Atlanta's Largest Building

Construction has begun in Atlanta on the 22-story, $15-million Merchandise Mart. It will contain close to a million sq ft of space.

Construction got off the ground after an $8-million loan from Metropolitan Life Insurance Co. of New York City to the builders, Atlanta Merchandise Mart Inc. and Downtown Mart Inc. That's the largest single loan commitment ever made to private enterprise in the Southeast.

The building will have a structural frame of reinforced concrete. Exterior walls will be made of concrete panels with a marble-chip or quartz finish.

An acre of parking and loading space will be available on the site. And there's room across the street for multi-deck parking facilities, if needed.

Edwards and Portman, Atlanta, are the architects. Massell Enterprises, Inc., Atlanta, is the contractor.

Pentagon Begins Work on $140 Million in ICBM Jobs

Four more base construction projects for intercontinental ballistic missiles have been announced by the Air Force. The bases—two for Titan ICBM's and two for Atlas ICBM's—will have a total contract value of about $140 million.

Launching facilities for nine Titans will be built underground in the vicinity of Ellsworth Air Force Base, Rapid City, S. D. The Titan squadron will consist of three complexes of three missiles each near Sturgis, Hermosa and Underwood, S. D.

Bids for the $42-million Ellsworth work were called in October. They will be opened early next month.

Bids will be opened November 20 on construction of a $46-million Titan ICBM base at Larson AFB, Moses Lake, Wash. It will be comparable to the Ellsworth base in layout.

Firing installations for nine Atlas ICBM's at Warren AFB, Cheyenne, Wyo., will be the third increment of missile construction at that base. The proposed $29-million project will bring the base's strength to 24 Atlas missiles.

Unlike previous Atlas launching facilities at Warren, the nine launchers now scheduled will be protected by being built underground or by bulwarked earth. Instead of being built in complexes of three or six, they will be installed singly.

Corps of Engineers representatives in the Kansas City District are acquiring nine sites for Atlas construction.

Georgia Again Cancels Highway Bid Calls

Georgia State Highway Department has canceled bid calls for the second time this year.

The U. S. Bureau of Public Roads has limited the state to only $1 million for November awards—an "insufficient amount" to warrant a letting, state officials say.

The canceled plans called for $6 million to $7 million worth of highway and bridge contracts this month. Georgia has only $8.5 million in federal aid remaining to obligate in this calendar year.

Although it is entitled to $80 million in federal funds for Interstate and "ABC" projects, it has already obligated most of the one-third portion allowed for the July-December half of fiscal 1960, ending next June 30.

Contractors now are finishing jobs at a rate of $4 million to $5 million a week. The state doesn't know how much of such volume the federal government will reimburse or how fast payments will be made from the Highway Trust Fund.

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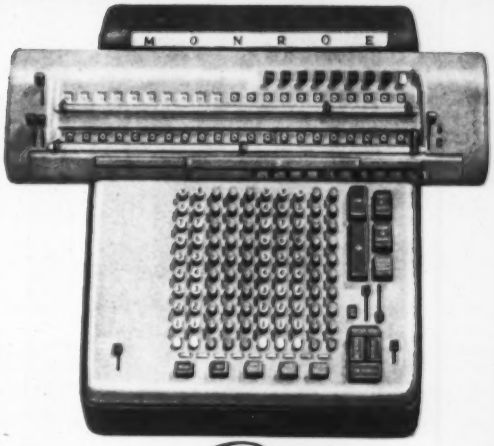

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1950: True Then—

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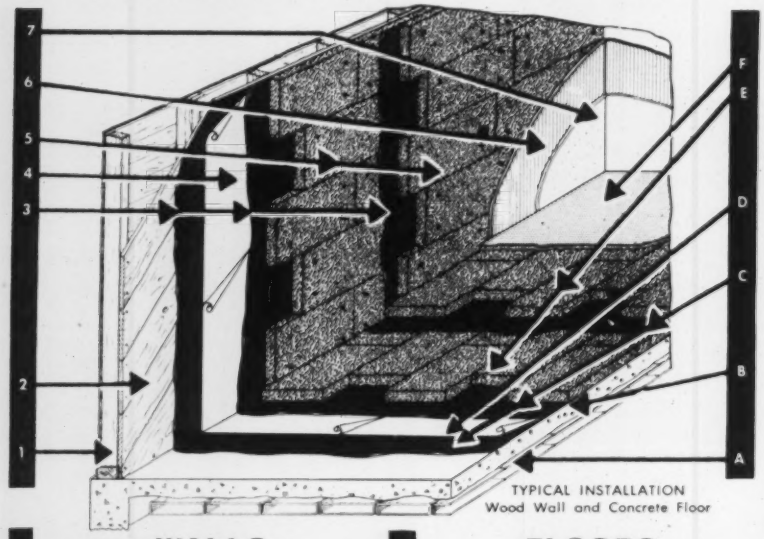

TYPICAL INSTALLATION
Wood Wall and Concrete Floor

WALLS

1 **WOOD STUDS**

2 **WOOD SHEATHING**

3 **LAYKOLD INSULATION ADHESIVE**
Brush or spray at 23 sq. ft. per gallon. Allow to set (turn black) then press on membrane or blocks

4 **VAPOR BARRIER MEMBRANE**
Press into adhesive. Use 3" laps; 1 to 3 layers.

5 **INSULATION BLOCKS**
When first layer has been placed, set skewers and repeat for next layer of insulation.

6 **LAYKOLD MASTIC WEATHERCOAT**
Point joints and trowel scratch coat at 8 sq. ft. per gallon. Let dry.

7 **LAYKOLD WEATHERCOAT**
Trowel at 15 sq. ft. per gallon for water-resistant finish.

FLOORS

A **TILE OR GRAVEL FILL**
For ventilation vs. freezing of the sub-grade.

B **CONCRETE SUB-SLAB**
If new, use Hydropel integral admix at 1½ gallons per sack of cement. Gives a dry slab.

C **LAYKOLD INSULATION ADHESIVE**
Spray, brush or squeegee at 23 sq. ft. per gallon. Let set (turn black). Then press on membrane and block insulation.

D **VAPOR BARRIER MEMBRANE**
Press into the adhesive. Use 3" laps—1 to 3 layers.

E **INSULATION BLOCKS**

F **2" LAYKOLD HEAVY DUTY FLOOR MASTIC**

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- **Laykold Weathercoat**
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Seaway Authority Awards Cornwall Bridge Contract

The St. Lawrence Seaway Authority has awarded a contract for construction of the superstructure and deck of the Cornwall North Channel Bridge to Canadian Bridge Division of Dominion Steel & Coal Corp., Ltd., Windsor, Ontario.

Canadian Bridge, one of four bidders for the work, will erect the steel superstructure and reinforced concrete deck of the bridge for $3,174,984.

The bridge will provide a highway and pedestrian crossing of the North Channel of the St. Lawrence River between Cornwall, Ontario, and Cornwall Island and of the Cornwall Canal. It is scheduled for completion in mid-1961. It will replace the existing Roosevelt Bridge, located one-half mile upstream.

The St. Lawrence Seaway Authority and the St. Lawrence Seaway Development Corp. (United States) have already built a new bridge over the South Channel between Cornwall and the U. S. mainland.

The North Channel Bridge and approaches will be about a mile long. It will be composed of a series of continuous truss spans.

Around the Country . . .

• **Top recruiters**—The aircraft and the missiles industries were the source of 75% of job offers made during the first half of the year to all types of engineering graduates of the class of 1959 at the University of California. More than half the graduates took jobs in aircraft, missiles and electronics work.

• **Long wood span retired**—Probably the longest wooden bridge in the U. S., the 2.3-mile Shands Bridge over the St. Johns River at Green Cove Springs, Fla., will be replaced by a $3-million steel and concrete structure. The wooden bridge was built in 1928 by a private corporation for $400,000 and sold to the State of Florida in 1937 for $210,000.

• **Manhattan Bridge bolstering**—New York City is planning a $7-million reconstruction of its 50-year-old Manhattan Bridge. The two upper deck roadways, now limited to pleasure vehicles, will be strengthened to carry trucks as heavy as 20 tons.

• **Apartments at second base**—New York City's Housing Authority is seeking approval for 1,700 low-rent public housing apartments on the site of the Polo Grounds, former home of the N. Y. (now San Francisco) Giants.

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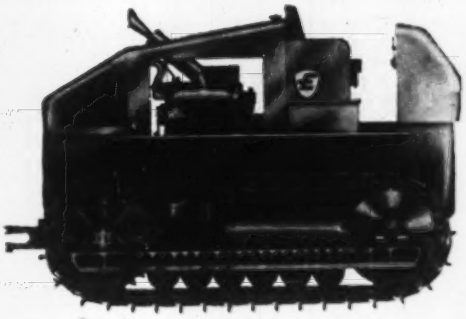

THE EIMCO 103

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The Eimco 103 features independent track operation through Eimco's famous "Unidrive" and Dual Final Drives. True spin turns on its own length.

You wanted a choice of speed ranges.

Eimco engineered "Quadra-Torque", giving you a choice of four forward and four reverse speeds. You can shift from one to the other or from forward to reverse and back again at any tractor or engine speed by the flip of a lever, without slowing or stopping tractor. Gears never reverse rotation in Eimco's exclusive "Unidrive" transmission. Soundly engineered simplicity means less maintenance, longer life.

You wanted rugged construction, with minimum maintenance problems

Unitized "Stress Flow" Construction is the answer, another Eimco exclusive. No bolts; no welds. Large, strong steel castings are molded to shape and thickness required for new, greater strength and rigidity. Main frame, final drive and center housing on Eimco 103 are all in one strong casting, as is track roller frame and diagonal brake assembly, yet components are still readily accessible!

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The Eimco 103 is powered by 100 HP General Motors or Cummins Diesels of latest, modern design and efficiency, teamed with single stage heavy-duty torque converter, for full utilization of power.

You wanted sufficient ground-clearance.

The Eimco 103 has full 17" ground-clearance, over 40% more than the average.

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FROM THIS: Old stations, costly upkeep . . .

Rundown track and ties, in need

TO THIS: Inexpensive, open shelters . . .

New trackage and new poles for

Converting an Old Railroad Pays

Metropolitan areas of the United States are choking on a byproduct of their own growth—overtaxed transportation facilities. Yet within many of these same areas, commuter rail lines are withering for want of passenger revenues.

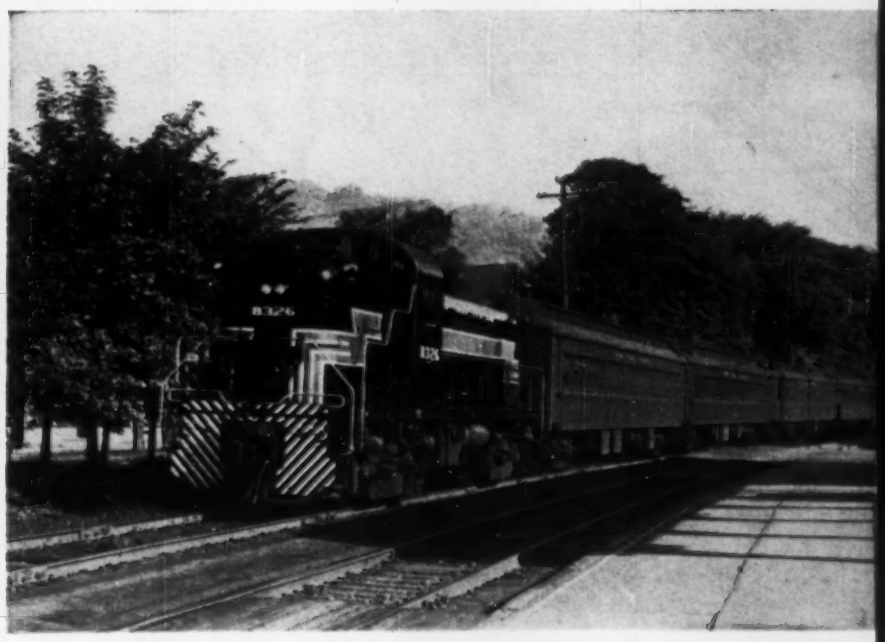
It is paradoxical that in regions where fortunes are being spent in an almost vain attempt to solve "commuter problems," railroads are battling to abandon or restrict passenger service.

Boston thinks it has an answer—and it has gone a long way towards proving it. In June, 1958, the city's Metropolitan Transit Authority took over an abandoned railroad line on the west side of the city.

Then the authority awarded Perini Corp., of Framingham, Mass., a $7-million contract to convert the abandoned line for rapid transit service. Perini put project manager Irving Huie in charge. And last July, just 13 months after the work started, crowded, high-speed commuter cars were running.

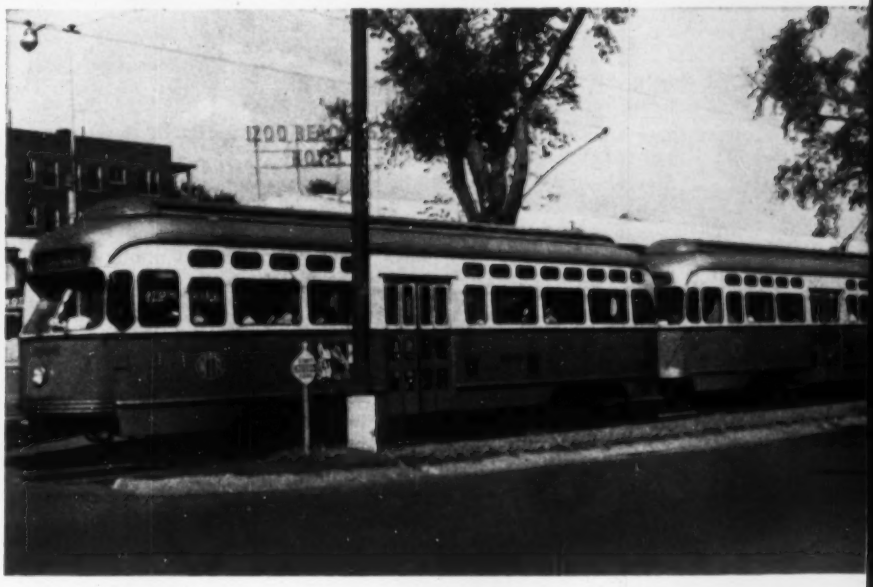
The line was a 9.4-mile section of the Highland Branch of Boston & Albany Railroad. It runs from the heart of Boston through the suburb of Brookline and

of repair or replacement . . .



Diesel-electric trains that made only four trips a day.

electrification . . .



High-speed trolleys run every 5½ to 12 minutes, 19 hours a day.

Off in Modern Rapid Transit

terminates at Riverside station, at the western boundary of the town of Newton (see map p. 32).

As a railroad, the Highland Branch provided a limited and little used service. Just prior to its abandonment in 1958, it ran only two passenger trains into Boston each morning and only two out of the city each night. The daily load was at most 2,200 passengers.

When converted to rapid transit service, the line quickly become popular—and its popularity is increasing. It carried 25,000 passengers daily in September, after only three months of operation. Breakeven point is 30,000 to 35,000. Boston officials expect business to pick up considerably during the winter months. Civic leaders are convinced the line will move into the black—and demonstrate that extension of rapid transit is a major answer to urban problems.

Success of the new line can be attributed to at least seven factors:

• **Lower fares**—The 20-cent fare for adults represents a 30% saving on the former railroad fare. (Children ride for a nickel.)

(*Turn the page*)

HOW RAPID TRANSIT fits into the Boston transportation setup. The Old Colony Line may be the next one converted to rapid transit.

• **Integrated service**—The commuter can now transfer to any other section of the MTA subway or surface lines without leaving MTA stations and without paying another fare. (The MTA is fifth largest transit system in the U. S. It permits free transfer between any of its facilities.)

• **Comfort**—Passengers boarding an MTA car at outlying areas can get to many of Boston's stores and buildings without going out of doors.

• **Frequent service**—For almost 19 hours a day, the MTA runs one, two- and three-car trains across the Highland Line at 5½- to 12-minute intervals, with the longer intervals restricted to weekends, and off hours on weekdays.

• **Speed**—The run from Riverside terminal to Beacon Street in the heart of Boston takes only 38 minutes on the electric cars. The same trip by automobile takes up to 1½ hours when the traffic is bad.

• **Near highways**—The Riverside terminal is near Route 30 just off Boston's famous circumferential Rte 128. It is also within a few thousand feet of the end of the Massachusetts Turnpike.

• **Good parking facilities**—The Highland Branch line terminal at Riverside and the preceding station at Woodland have huge parking lots. The charge for all day parking is only $.35. (Within city limits the charges range from $.75 to $3.00—and the parking lots are not always conveniently located.) Most Highland Branch passengers don't park their cars however. It's estimated that three out of four commuters are driven to the station.

Conversion of the Highland Branch Line to high-speed service isn't showing a profit yet. But officials are highly optimistic and its benefits to the communities and the people it serves are undeniable:

• Customers and clients have been brought closer to the "downtown" professional men, shops, businesses, and entertainment areas.

• Shoppers, theater-goers and shift workers who travel during off- hours, can now use rapid transit rather than their cars.

• Boston's traffic congestion—bad at best—has been reduced by several thousand cars a day.

• Property values in the towns served reportedly have increased. MTA representatives report many calls from prospective purchasers regarding the proximity of the service to various locations.

• Reverse riding has been stimulated —many city residents who work in the suburbs or in the industrial and commercial areas near Rte 128 now use the rapid transit line instead of driving. This was impossible when the B&A had the tracks because the railroad ran its passenger trains only towards the city in the morning, away from the city at night.

What goes into converting a railroad line into a rapid transit facility? Contrary to a popular opinion, it isn't done by simply putting subway cars on the tracks and stringing a few wires overhead.

The most critical feature of any such change-over is the generally rundown condition of any abandoned or about-to-be-abandoned trackage. MTA survey teams discovered during their preliminary investigations that a great deal of work would have to be done on the Highland Line before it could safely carry transit cars.

Here's what MTA found and what the contractor did:

Drainage—The original roadbed was designed so that water would flow from the track area into ditches cut at the edge of the right-of-way. In many places these ditches needed cleaning; in others, man-made changes in the adjacent topography required larger ditches. Some four miles of ditch had to be cleaned out, enlarged and reballasted.

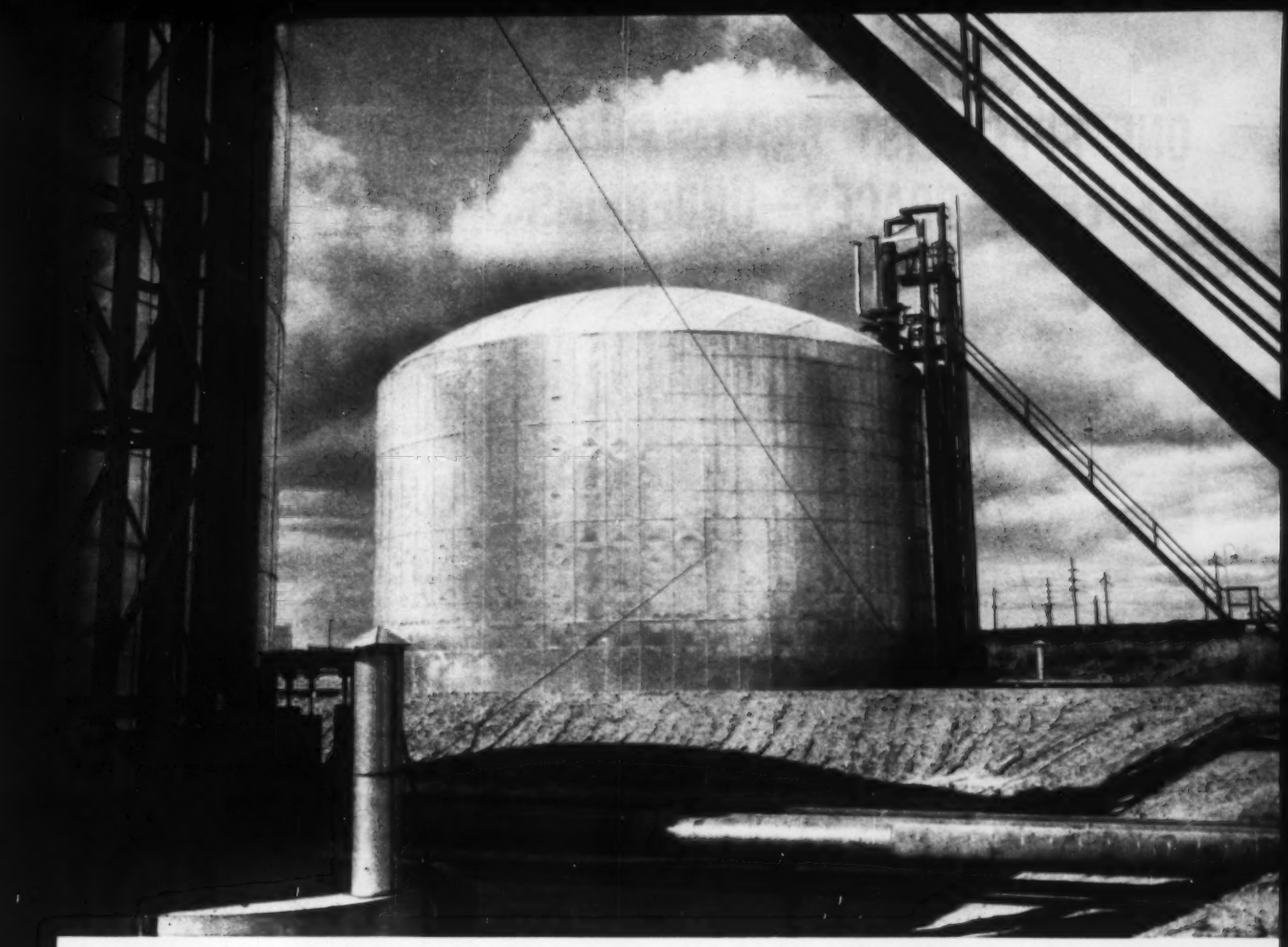
Ballast—Except for one 3,000 ft section, all track was ballasted with cinders and gravel. MTA would have preferred stone ballast, but it decided that the existing base would be adequate for about 75% of the total mileage. For some 12,500 ft of right-of-way new stone ballast was required; most of it beneath new tracks and ties.

Ties—Supporting the track taken over by the MTA were 56,200 ties. Every one of them was thoroughly inspected. About 2,200 of them were placed between 1944 and 1955 and were in good condition. Half of the remainder (27,000) were in poor condition and had to be replaced. The remaining 29,000 were satisfactory after correction for plate wear.

Track—Because of age and a minimum of maintenance, the tracks on the Highland Branch Line were in poor condition. The rails are 6-in., 105-lb Dudley T roll, 33 ft in length. About 86% of it was rolled in 1913, the rest in 1925. All of it was in poor condition, but much of it was usable after being resurfaced and realigned. About 25,000 ft of track had to be replaced because of battered joints, deformed surfaces and worn bases. The track work was done by the Acme Construction Co. of Solon, Ohio, subcontractor for Perini, under the direction of job superintendent F. E. Collins.

In spite of the extensiveness of track work, MTA engineers believe rehabilitation cost only 45% of what it would have cost to rebuild the track completely.

Stations—On the track taken over by the MTA there were 11 massive, old and ornate stations. They were all



Novel Aluminum-Insulated Tanks for Double-Duty Storage of Liquid Butane and Anhydrous Ammonia

The science of cryogenics is no more profitably applied than at St. Paul Ammonia Products, Inc., Pine Bend, Minn., where two 45,000 bbl. low-pressure, refrigerated steel tanks with multiwall aluminum insulation were recently placed in dual-service.

During the summer and fall, liquefied butane is stored at +25°F. During the winter and spring, anhydrous ammonia is stored at −18°F. The design pressure, in both instances, is 5 psig.

Thus, in summer when butane is more readily available, the two tanks preserve huge quantities of potential B.t.u.'s in a relatively small area, thanks to storage as a liquid at a low temperature and pressure. The butane is used by St. Paul Ammonia as a raw material for manufacturing anhydrous ammonia, which, in turn, is stored in the tanks for the spring, when demand from fertilizer users is heaviest.

A low operating cost is achieved by a completely automatic system of filling and emptying the tanks. Outer layers of aluminum to reflect the sun's rays provide an insulation that effectively aids in maintaining the desired temperatures. Asbestos Products, Inc., St. Paul, installed this novel insulation.

Designed, fabricated and field-erected by Graver, these two tanks represent one of many types of cryogenic storage and processing equipment Graver has been called on to design and produce. The opportunities for cutting costs and improving efficiency are substantial when the science of cryogenics can be employed. If there is an application in your operation, it will pay you to talk it over with Graver.

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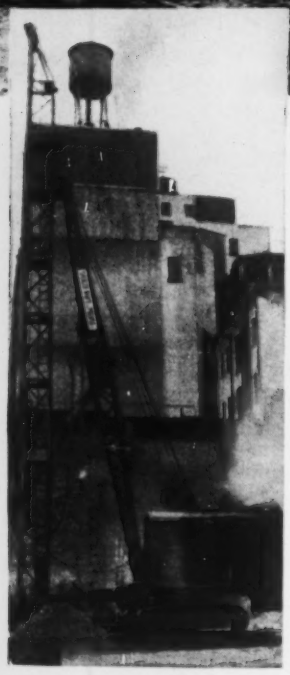

Project: Fashion Institute of Technology for New York City Board of Education
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. . . Railroad conversion

structurally sound but unnecessary in commuter service where the time between trains is measured in minutes. They were demolished and replaced by small, wood-frame shelters enclosed on only three sides and the top.

Power supply—Because there was no electrification on the old railroad, the MTA spent more than $1.1 million to install power facilities. The work was handled for Perini by the Massachusetts Electric Co. It included installation of a power plant, booster stations, and poles and overhead wires for trolleys.

Signals—None of the signals used by the B&A was suitable for use with MTA cars. A completely new $600,000 signal system had to be installed and the old system removed. This was also done by Massachusetts Electric.

The total cost to the MTA for rehabilitation of the B&A line came to $8.6 million. This is broken down as follows: track work, $1.34 million; signal system, $570,000; miscellaneous (land taking other than B&A right-of-way, engineering, supervision, overhead and interest) $2.45 million; general construction, $3.1 million.

The general construction item included stations and shelters, storage yards, parking areas—and a difficult tunnel connection at Beacon Street where the B&A tracks are hooked into the existing MTA system.

From the quantity standpoint, there was nothing impressive about the connector. It required only 31,000 cu yd of excavation, 7,500 cu yd of concrete and 125 tons of structural steel. Yet Perini and his subcontractors performed their most exacting, and expensive work at the connector. Its proximity to city streets and existing buildings demanded heavily sheeted walls; the close quarters tightly restricted working and storage areas, called for careful movement of machines, finely coordinated scheduling of material shipments. The breakthrough of the subway wall was a delicate job, even though much of the work was done between midnight and 5 a.m. when no trains were running.

The Highland Branch is not the first Boston transit line to be built over a railroad right-of-way—nor will it be the last. The Mattapan Line to the south and the Revere Line to the north were built over abandoned railroad routes.

So promising is Boston's latest venture into rail rapid transit, that the State of Massachusetts, acting through its newly formed Massachusetts Transit Authority, has purchased another abandoned railroad line. This one is part of the Old Colony Railroad on the south side of Boston, and it too is slated for future conversion to high-speed commuter service.

5 PAVING RECORDS IN 14 MONTHS!*

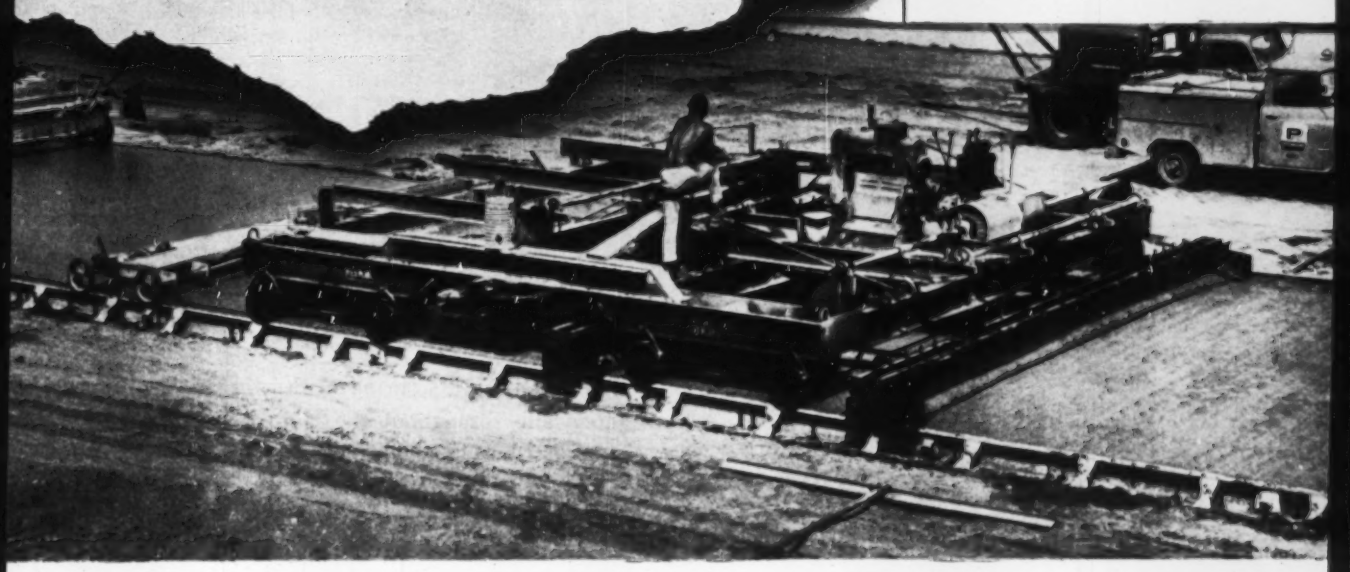
using Heltzel Flex-plane Combination Finisher-float Machines

Paving records established using the Flex-Plane "Combination"

1. **SARGENT CONSTRUCTION CO.,** Saginaw, Michigan, July, '58. 5787' of 9" x 24' slab in 12½ hours.
2. **DENTON CONSTRUCTION CO.,** Grosse Pointe Woods, Michigan, Aug. '58. 6029' of 9" x 24' slab in 12½ hours.
3. **KOSS CONSTRUCTION CO.,** Des Moines, Iowa, June '59. 6067' of 9" x 24' slab in 12½ hours.
4. **PIERSON CONSTRUCTION CO.,** Saginaw, Michigan, August, '59. 6244' of 9" x 24' slab in 12 hours.

Canadian Record:

5. **HURON CONSTRUCTION CO.,** Chatham, Ontario, July, '59. 5290' of 9" x 12' slab in 12 hours.



(above) Pierson's record-setting "Combination" at work on U. S. 12, Hartford, Michigan.

(below) Huron Construction's '59 Model Gas-Electric "Combination" setting new Canadian record.

Michigan contractor finishes 6244 feet of 9"x 24' pavement in 12 hours...paves 5 miles in 5 consecutive working days!

The most recent of 5 paving records has been achieved by Pierson Contracting Company of Saginaw, Michigan. From Saturday, August 8th through Thursday, August 13th, they paved 26,526 feet of 9" x 24' pavement on U. S. 12 near Hartford, Michigan. Total hours worked—52.

On Tuesday, August 11th, 6244 feet were paved in 12 hours for the longest single day's run—and another new U. S. paving record.

Speed is not the final measure of a finishing machine's worth. But the ability to produce a finish that meets or exceeds State and Federal specifications, plus the capacity to do it faster and more economically, is important to every paving contractor. Several of these record-setting contractors have stated that their record runs would not have been possible without their "Combinations". Further proof that top-rated contractors depend on Flex-Plane top-rated finishing equipment.

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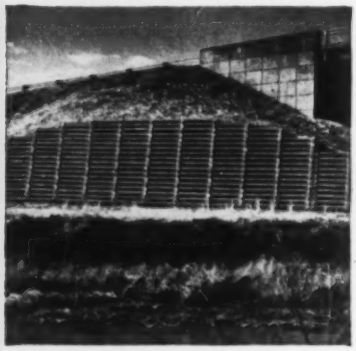

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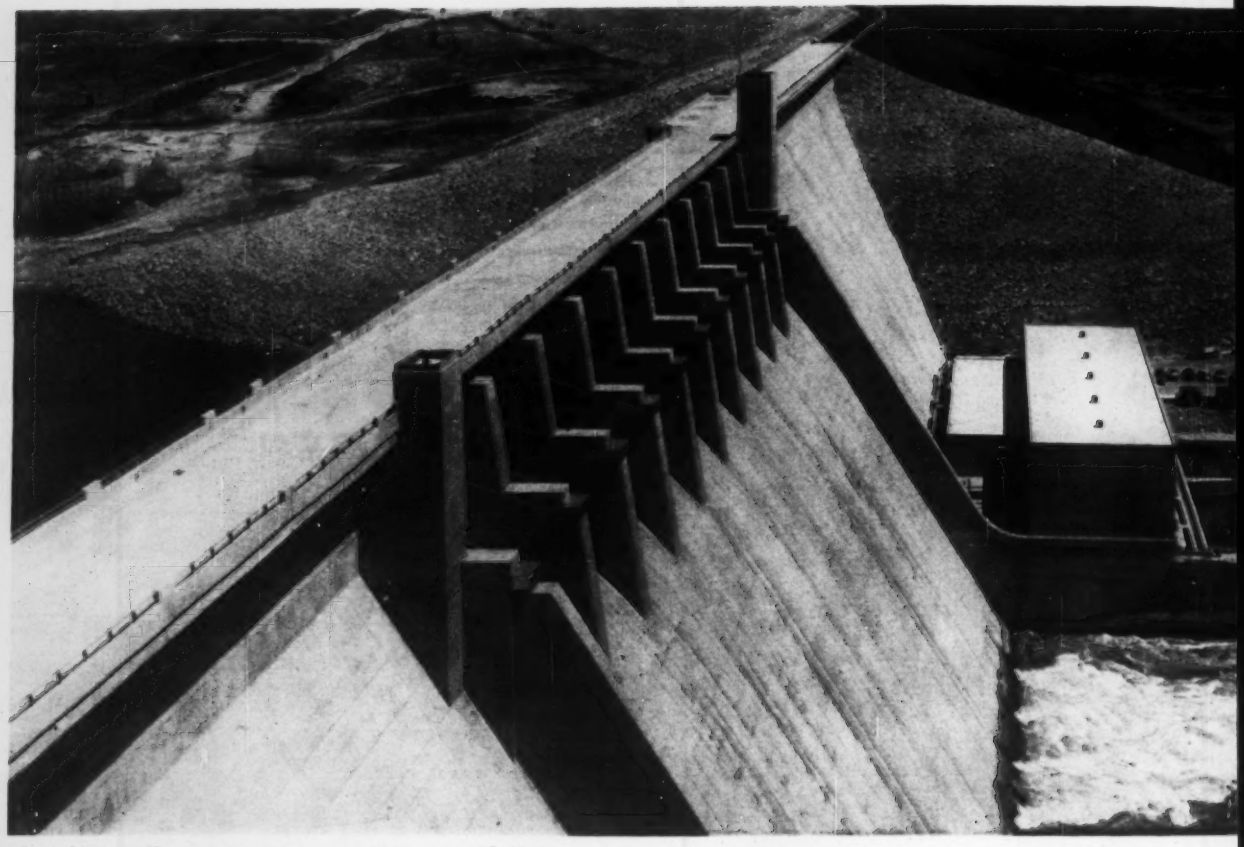


This $66-million project is nearing completion.

Table Rock Dam: A Good Buy in

If Table Rock Dam could be described in one word, that word would be "bargain." The multi-benefit project—fourth of nine dams proposed for the White River Basin in Missouri and Arkansas—will cost well under the original estimate and provide twice the originally planned power.

Yet back in 1954, after challenges to the project's feasibility, Congress would vote the necessary appropriations only after receiving a special report from the Chief of Engineers.

Corps estimate for the flood control and hydroelectric project was then $78.6 million for a 100,000-kw installation.

The project is now near completion. Estimated cost: $66.5 million—and for a 200,000-kw installation. One reason for the bargain is the excellent price brought by heavy competition on the original bids.

One of the doubts heard back in 1954 was that there wouldn't be enough demand for the project's 100,000-kw power production. Now there is enough demand for 200,000 kw.

Reason for the unforeseen demand is a major change in the concept of how federal power is to be used. Federal hydroelectric plants once served as separate sources of power for certain groups of customers. Now they are used more and more for peaking in an integrated hydro-thermal system—and that's their true economic function.

In the White River development, for example, the estimated value of power credited to eight units in operation at Bull Shoals Dam is $5,989,000 annually. The original 1954 estimate: $3,735,000. The benefit-cost ratio is now estimated at 1.5 to 1—considered excellent.

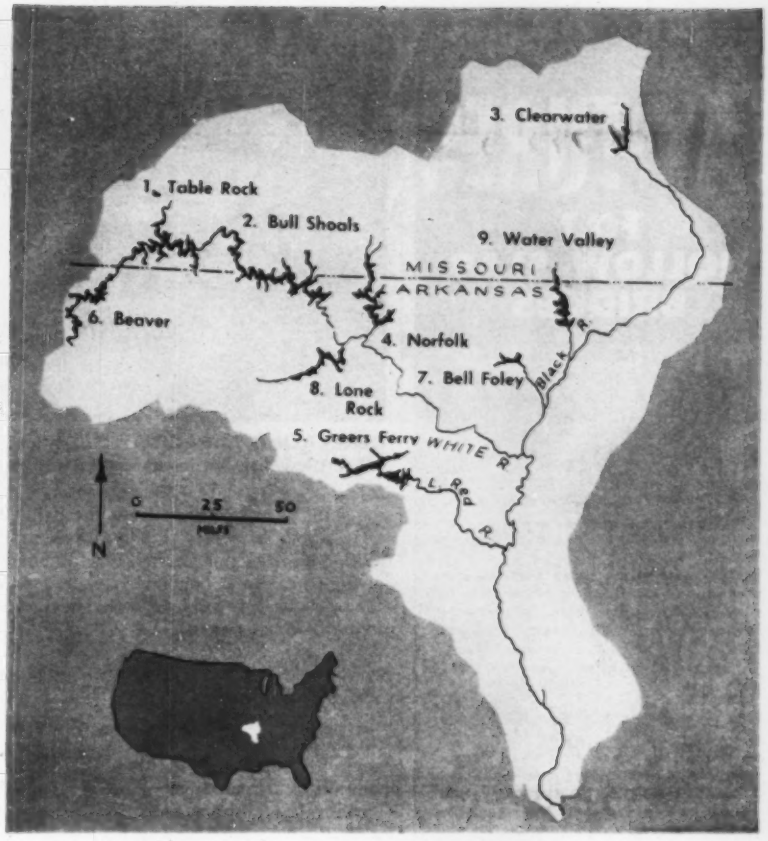
• **And as a bonus**—The lake behind Table Rock Dam will add further attraction to the hilly, picturesque countryside. It will have a 745-mile shoreline around 43,100 acres at top of power pool. The lake will be 52,300 acres at top of flood control pool.

The lure of water sports and scenic beauty should prove as profitable in the Table Rock area as it has been a few miles southeast at Bull Shoals Reservoir, which last year attracted 2,693,800 visitors. The lake is also an important reason for the rapid development of the area by homebuilders.

One of the complaints heard in 1954 was that fish life would be harmed by the dam construction. True, the traditional float fishing will no longer be possible along this section of the river, but once the reservoir fills, lake fishing will more than make up the loss to sportsmen.

Some of the best bass fishing in the country, for example, is at Bull Shoals Reservoir. And below the dam, cold water releases from the reservoir are providing excellent trout fishing, impossible under normal circumstances in this region.

By Brig. Gen. William Whipple, Jr., *Division Engineer of the U. S. Army Engineers' Southwestern District. Headquartered in Dallas, he supervises Corps of Engineers water-resources programs in watersheds from Eastern Missouri to the Continental Divide and from Central Kansas to the Rio Grande.*



Key numbers on basin map refer to table below.

Hydropower and Recreation

An estimated $8.3 million in federal funds will go into relocation of roads and bridges to handle the expected surge in tourist traffic. Largest items are the White River crossing of Highway 13, $1.96 million; the Shell Knob Bridge, $1.24 million; and the Long Creek Bridge, $1.57 million.

• **Flood forces relocation**—The original schedule of real estate acquisitions and relocations would have permitted the reservoir to start filling sometime this year. But in 1957, when the White River flooded far in excess of the dam's diversion capacity, water was impounded behind the uncompleted structure, pouring over the spillway's unfinished monoliths.

Construction was not seriously interrupted and the dam was undamaged, but the rising water flooded agricultural lands not yet acquired by the government, forcing the inhabitants to move out. It also flooded highway bridges

NAME	Total storage, Acre-ft	Flood control storage, Acre-ft	Power drawdown storage, Acre-ft	Height of dam above stream bed, ft	Power head range, ft	Installed capacity (ult.) kw	Cost (July 1, 1959 basis)	Reservoir area (max) Acres	Miles of Shoreline (max.)
1. Table Rock	3,462,000	760,000	(1)1,182,000	252	171–205	200,000	$66,500,000	52,300	857
2. Bull Shoals	5,408,000	2,360,000	(1) 626,000	258	182–197	340,000	(2)82,192,000	71,200	1,050
3. Clearwater	413,000	391,000	.....	154	.....	.....	9,783,000	10,300	172
4. Norfork	1,983,000	732,000	707,000	222	133–175	140,000	(3)28,707,000	30,700	510
5. Greers Ferry	2,844,000	934,000	716,000	243	158–184	96,000	52,200,000	40,500	343
6. Beaver	1,961,000	309,000	(4)1,096,000	228	135–190	112,000	56,100,000	31,700	501

7. Bell Foley; **8.** Lone Rock; **9.** Water Valley (Authorized for future Construction)

(1) With Beaver project upstream. (2) Units 1-6, ultimate installation 8 units. (3) Units 1 and 2, ultimate installation 4 units. (4) Includes water supply storage.

NINE DAMS—four of them completed—comprise Army Engineers' White River Basin plan.

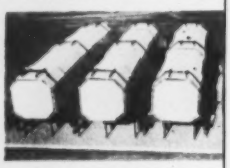
JAY-TUBES
FOR HOLLOW SLAB BRIDGES

BETTER DESIGN! Jay Tubes give maximum strength and displacement of concrete for a given cross-sectional area. Cellular cores provide multiple cross-bracing for great resistance to crushing, and compartmentation minimizes concrete loss from holes that might occur.

RIGID & RUGGED! Both material and design contribute to the better job done by Jay Tubes. They are constructed of Freezurboard, an asphalt-impregnated and wax-saturated construction board exclusive with Lawrence Paper Company. Freezurboard is not to be confused with ordinary kraft or paper materials.

JAY TUBES DISPLACE MORE CONCRETE . . . PROVIDE LOAD CARRYING CAPACITY BY REDUCING DEAD LOAD WEIGHT . . . SHIPPED FLAT TO SAVE ON FREIGHT, HANDLING AND STORAGE.

Jay Tubes may be strapped down by conventional methods or by the new Jay System of tie-down.



QUICK! Self-centering and self-aligning, the Jay System requires fewer holes in the decks which need not be exact. Standard bolsters and pre-formed hold-down bars with hook fasteners are all easy and quick to put in place! Eliminates individual chairs, time-consuming strapping, and requires no special tools.

LET US QUOTE YOU ON THE NEXT HOLLOW SLAB BRIDGE YOU BID!

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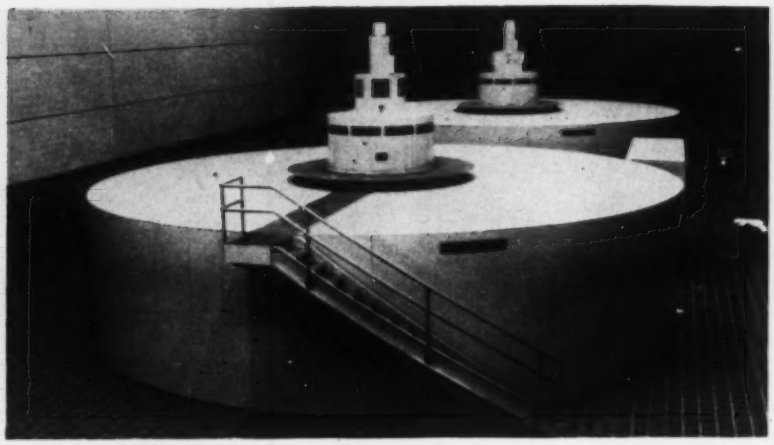


GENERATING CAPACITY will be twice that originally intended, but Table Rock still will cost less than the amount anticipated in planning the project.

along the river upstream from the dam.

Although it cost the government $200,000 in damages to unacquired lands, the flood damage prevented downstream by the unscheduled impoundment is estimated at $1,473,000. Thus Table Rock's benefits were outstripping its cost even before the dam was completed.

• **Foreign bids lower costs** — Foreign competition on major items of installed competition helped keep costs down. Turbines and transformers were supplied by English Electric Export and Trading Co., Ltd.

But dealing with foreign concerns did bring some significant problems in planning.

Because of differences between U. S. and British technical standards and because the contractor sublet a substantial portion of the work on the continent, many conferences and considerable correspondence were required to reach agreement on interpreting the details of the specifications.

For example, runners for the first two turbines were cast in West Germany and for the second two in Switzerland, while shafts for the second two were forged in West Germany.

The standard specifications used in 1955, when bids on the first transformer were taken, did not mention location of the delta connection of the low voltage leads. The low-bidding foreign firms offered transformers with this connection outside the case, contrary to the usual and preferred American practice. Therefore all bids had to be rejected and readvertised with the connection specified inside the case.

The contract had to be modified again after the award, when it was found that the manufacturer planned a cooling system that relied on only a few large fans instead of using the more reliable and efficient multiple fan cooling that is accepted American practice.

The transformer was the largest ever used by the Corps in this Division—105 tons, stripped down for shipment and without oil.

The foreign-made equipment has satisfactorily passed the initial testing period and is now in service. The first pair of 50,000-kw turbines is on the line, the second pair is being installed.

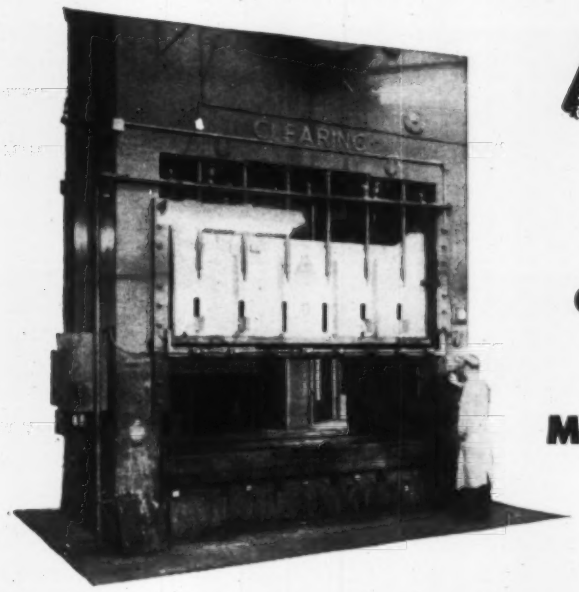
Principal contractors on the project were Morrison-Knudsen Co., Inc., Utah Construction Co., General Construction Co., H. B. Zachry Co. and Ralph E. Mills Co., Inc.

Here's the way foreign bids were analyzed:

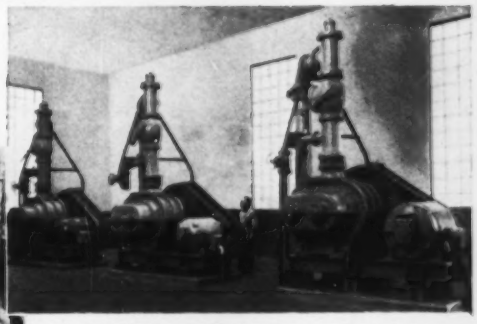
Item	Low Evaluated Foreign Bid	Low Evaluated Domestic Bid	Difference	% Below Low Domestic Bid
Two Initial 68,000-hp Turbines	$1,066,662	$1,211,125	$144,463	11.93
Transformer (90,750/121,000 kva) to serve two units	155,450	210,050	54,600	25.99
Two additional turbines	1,361,900	1,506,430	144,530	9.59
Second Transformer	196,730	416,288	219,558	52.74

RESILIENT MOUNTING

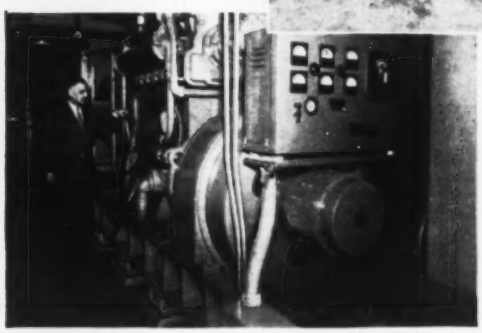
CUTS FOUNDATION COSTS IN HEAVY MACHINERY INSTALLATIONS



RESILIENT MOUNTING of this 400-ton capacity Clearing press at the RCA-Whirlpool-Seeger Plant in St. Paul, Minn., directly on Korfund Vibro-Isolators effected dramatic savings in eliminating special foundations and reinforcement. Isolators protect the structure, nearby equipment, personnel, and the press itself from shock and vibration. View at right shows mounts being installed below floor level. →



RESILIENT MOUNTING of these 3 Sutorbilt Blowers at the City of San Jose, California, Sewage Treatment Plant on Korfund Vibro-Isolators cut foundation costs and provided trouble-free, complaint-free operation, even though the plant is located in a residential area.



RESILIENT MOUNTING of this 300-hp Fairbanks-Morse Diesel-Electric Generator at General Telephone Co. of Los Angeles on Korfund LK/E Vibro-Isolators completely eliminated the need for a foundation, yet protects delicate switching and electronic apparatus from malfunction and damage due to vibration.

RESILIENT MOUNTING, soft, but elastic, is safe and practical. Korfund steel spring mounts prevent transmission of vibratory forces and change harmful sudden shock loads to harmless gradually applied forces. Foundation costs are cut! It is no longer necessary to add the usual 100%, or higher, safety factor for dynamic forces—required with rigid mounting methods—when figuring structural and soil loads, if Korfund resilient mountings are used. Korfund Vibro-Isolators absorb these dynamic forces and protect the structure and the machine itself from damage due to vibration and shock.

Next time you run into a problem of this kind, it will pay you to get in touch with Korfund first. Many case histories with complete specifications are available. Chances are, Korfund engineers have solved a problem just like yours in the past. Meanwhile, write today for your copy of Bulletin 3 9 which gives full details.

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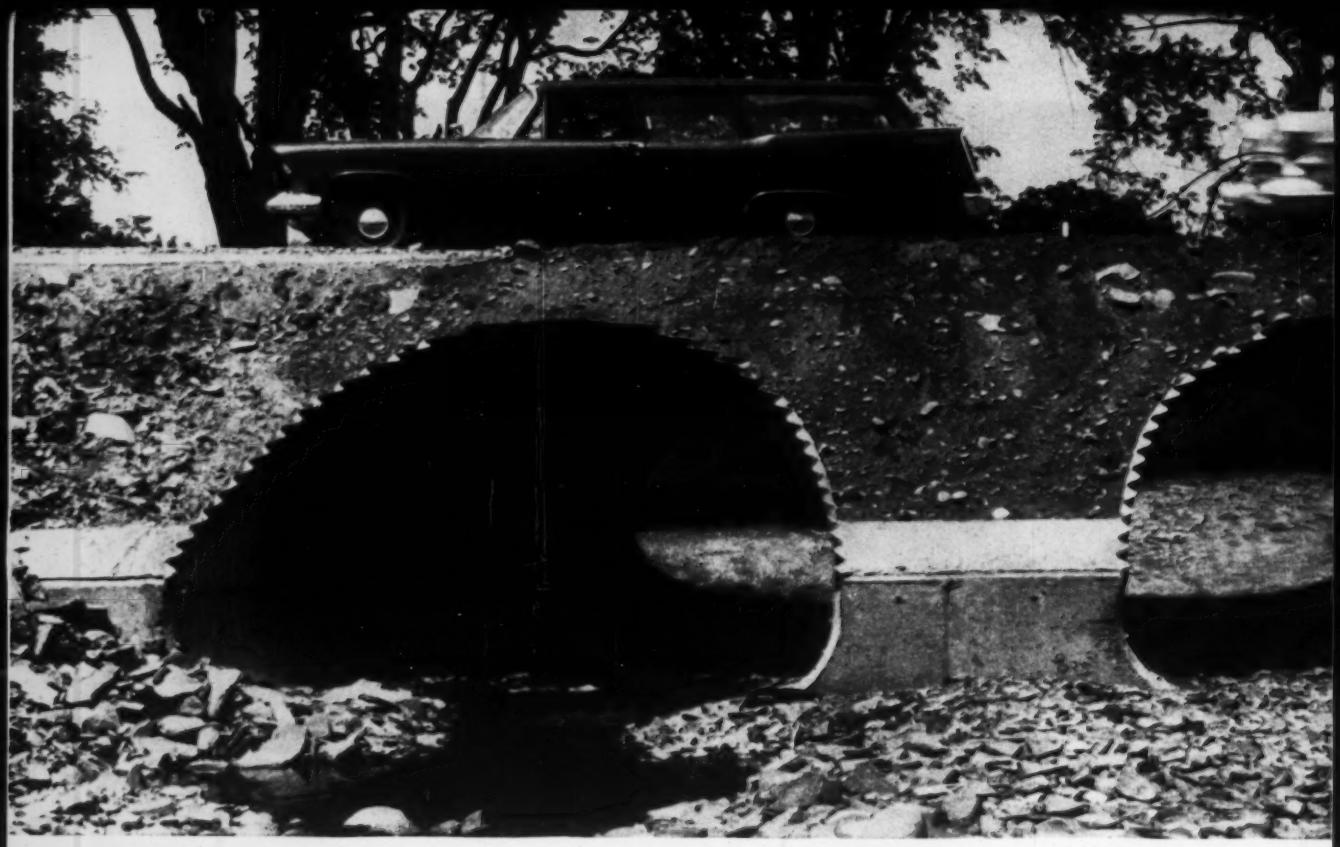
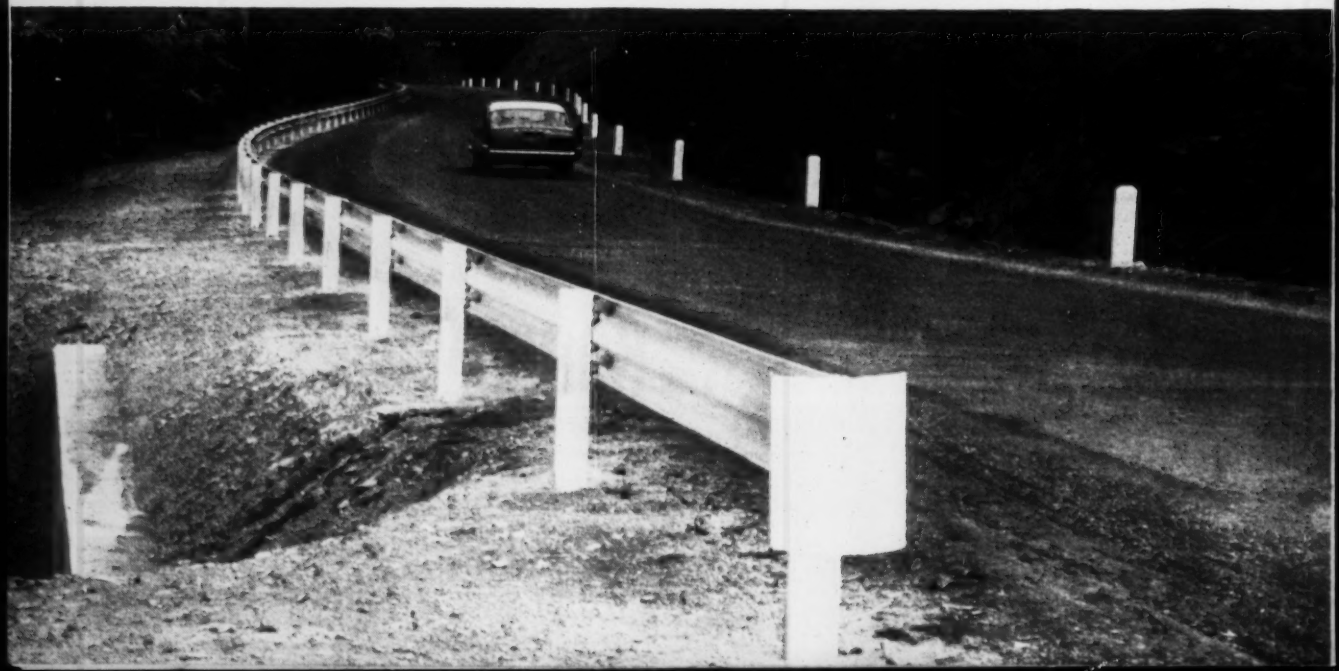


KEEP OUR ROADS ON THE GO

Let American Bridge help do

USS AmBridge Highway Beam Guardrail and Posts provide the surest traffic safeguard available. The rugged, flexible and highly visible steel beam guardrail is easily and firmly bolted to quickly driven steel posts. Available in 25' lengths to minimize splicing.



USS AmBridge Sectional Plate pipe, pipe-arches and arches eliminate the need for forms. And, being made of steel, there is no breakage. They are placed quickly, and can be extended whenever the road or fill is widened. They are extremely durable, and they can be relocated if necessary. AmBridge Sectional Plate comes in a complete range of standard sizes.

There's nothing easy about building a road, especially where there is an obstacle to span—or drainage to accommodate. Fortunately, however, you can throw these tough jobs to an outfit that specializes in handling them: American Bridge.

Wherever man or nature has created a space barrier, American Bridge can build a bridge of any length to span it—or we can re-floor an old bridge to support more weight . . . without stopping traffic. If the problem is a meandering creek, it can be funneled through an American Bridge drainage structure, which can be placed in days and will last for years. On the finished road itself, American Bridge can supply the strongest, simplest, *safest* guardrail on the market.

All AmBridge highway products are made from steel, and are manufactured to long-established, dependable standards. They can be placed quickly and simply—without kid-glove handling. Contact any office for information, or write to Pittsburgh for literature on sectional plate, bridge flooring or guardrail literature. *USS and I-Beam-Lok are registered trademarks*

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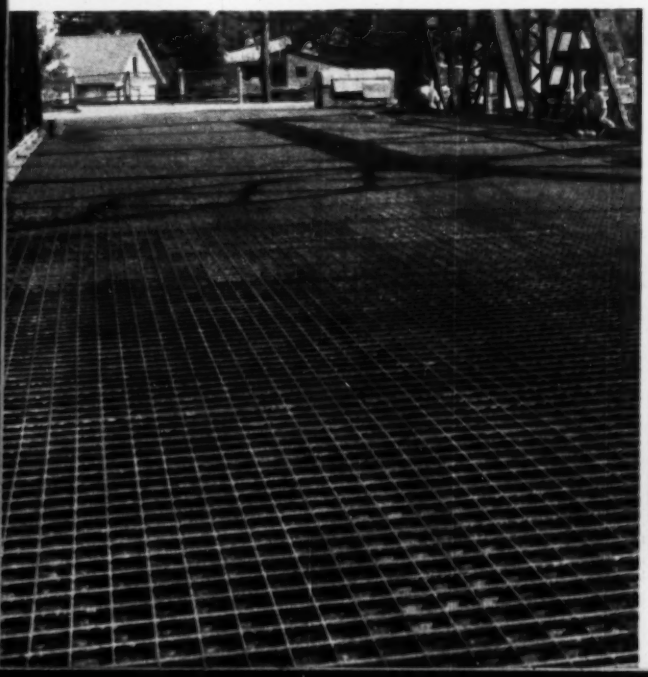
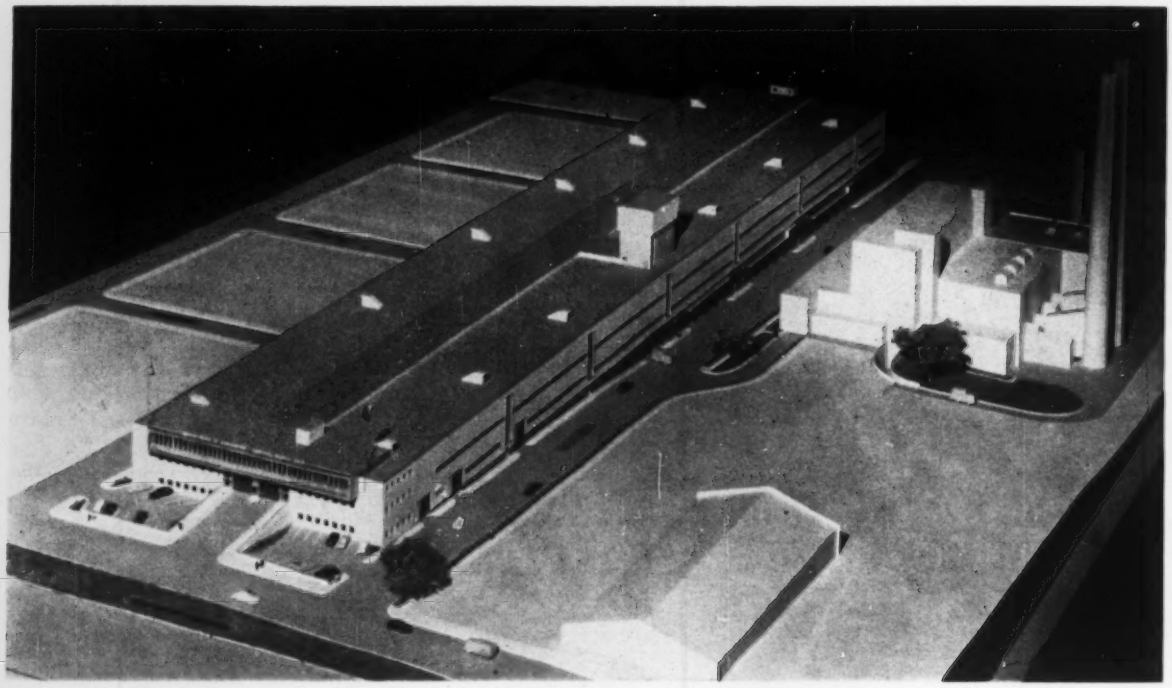
the toughest part of your roadwork

USS AmBridge I-Beam-Lok—the sturdy, lightweight, long-life bridge flooring for modern traffic—saves money on erection and maintenance. Ease and speed of installation minimizes traffic interruptions. Filled-type shown below, before pouring concrete, is available in units 6′ wide and up to 49′ long. They can be applied directly to stringers on spans from 6′ up to 8′ centers. Open type also available for spans up to 4′ long.

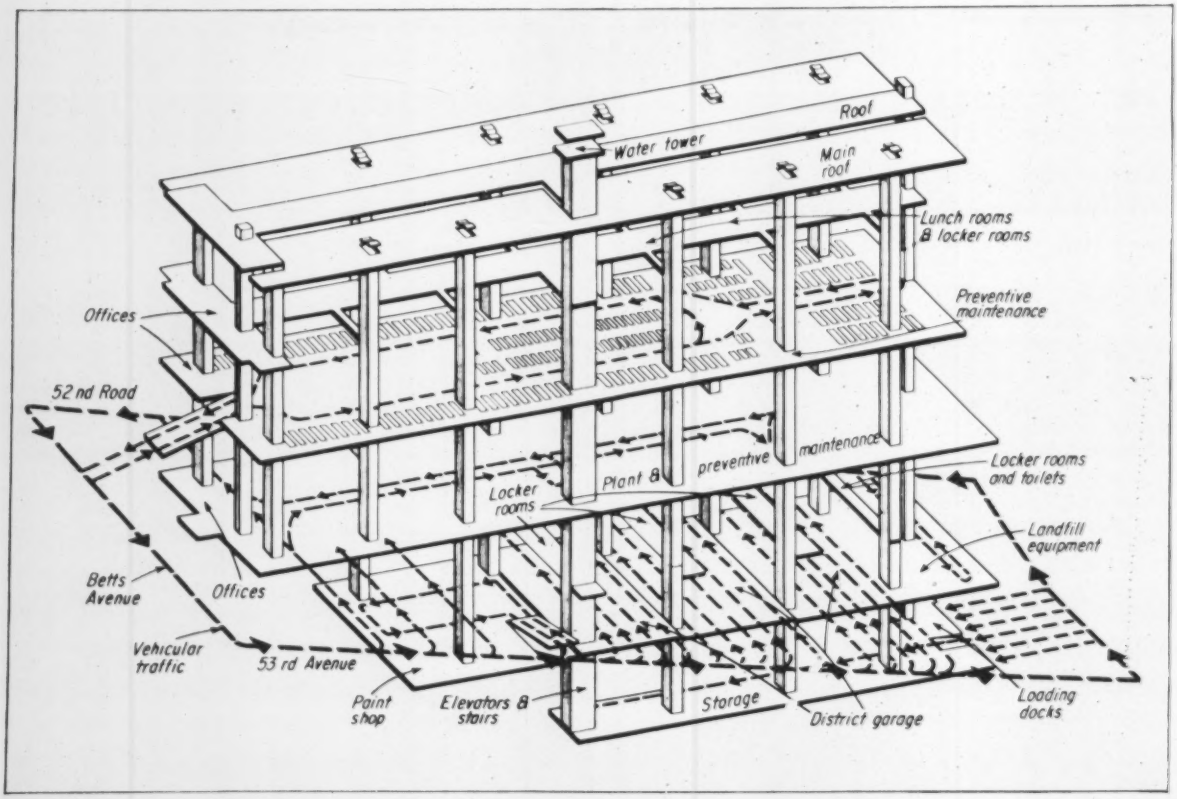
Steel is basic for bridges. And nobody knows more about building steel bridges than American Bridge; specialists in steel fabrication and construction since 1900. In nearly sixty years, we have handled every conceivable type of job. From big ones like the mighty Mackinac Bridge, and the new Carquinez span (the first major shop-welded bridge) to thousands of simpler and shorter structures.



A Giant Shop to Do a Giant



Planned central repair shop for New York City's Department of Sanitation has . . .



. . . Ramps and direct street approaches so vehicles can enter at each level.

Maintenance Job

Picture an industrial organization with $35 million worth of motorized vehicles and $150 million worth of buildings and equipment. Picture also having to design one central repair shop to service all this machinery and equipment.

These unlikely conditions exist. The Department of Sanitation of the City of New York has all these vehicles, equipment and buildings. And it will take bids shortly on a newly designed $15.3-million central repair shop.

The planned structure is a 1,135-ft-long, 200-ft wide job shop with some 730,000 sq ft of floor area on five levels. It will house 1,700 employees.

The structure will incorporate and centralize all the varied sanitation shop facilities now scattered through New York's five boroughs. The object: lower operating maintenance and rental costs.

Here's how the design was developed:

• **Building needs**—Basically the sanitation building has to incorporate four major functions:

• All shops and office facilities for the maintenance and repair of motor vehicles—including large escalator compactors, flusher trucks, street sweepers, passenger cars, light trucks, crawler tractors and cranes.

• All shops and office facilities for the maintenance and repair of the department's buildings.

• Garages for three nearby sanitation districts, including appropriate offices, lockers and washrooms.

• Central storage space.

Constant, easy movement is essential. Trucks must reach repair shops without elevators or complex ramps. And material must reach the shops without complex handling arrangements.

• **Site helps**—The large sloping site, located in the Borough of Queens, is 200 ft wide by 1,300 ft long, permitting a structure with ample perimeter for easy access. And the natural slope of the grade can be exploited to provide the many vehicular entrances required.

The flow diagram at left shows how the building is designed to step down with the natural grade. The diagram also shows how vehicles can maneuver.

A truck or passenger car, which requires periodic maintenance check and repair, approaches the central repair shop along Betts Avenue and drives up the ramp to the top (preventive maintenance) level. It is directed by the control booth at the entrance to a specific location on the floor—to truck chassis repair, or truck repair or passenger car repair.

The level immediately below contains all the mechanical shops required for repair of parts and for plant maintenance. Trucks drive directly to the shops to deliver materials and pick up finished products.

The district garages, the truck painting shop, heavy landfill equipment shop and broom repair fill the floor below. All these areas are approached via 52nd and 53rd Ave.

Under the garages is the storage level, with inventory control offices reached by loading docks, and a large service yard at the east end of the property.

The site is located at both the geographic and population distribution center of the city. This results in minimum trucking costs to and from the many district garages. The location is accessible to adjacent main traffic arteries and is largely undeveloped, requiring little demolition.

• **Unusual heat source**—The central shop will be located near a large city-owned incinerator. Waste heat from the incinerator will be used to provide hot water and steam.

During the heating season the waste gases will be diverted through two new waste-heat boilers to generate steam. The boilers can be oil-fired in case the incinerators break down. A small, supplemental oil-fired package boiler unit is provided for summer use.

• **Structural design**—The heavy concentrated moving loads of large vehicles and the need for wide column spacing to permit easy maneuvering were primary factors in determining the structural design. Some bays are 45 ft by 40 ft. A steel beam-and-girder system with concrete floor slabs was found to be most suitable. Comparisons were made with concrete flat slab and concrete beam and girder-construction before arriving at a decision. The structure will have spread footings of reinforced concrete.

Fellheimer & Wagner, New York City architects and engineers, designed the project under the supervision of the Department of Public Works.

Contract drawings will be completed this fall.

By Leon A. Gehorsam, *an associate in Fellheimer and Wagner, the New York City architects-engineers who designed this project.*

LABYRINTH WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!

LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

• Corrugated ribs grip concrete, insure an everlasting bond between joints.
• Finest polyvinyl plastic resists chemical action, aging, severe weather.
• Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
• There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

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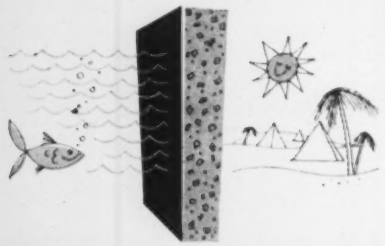

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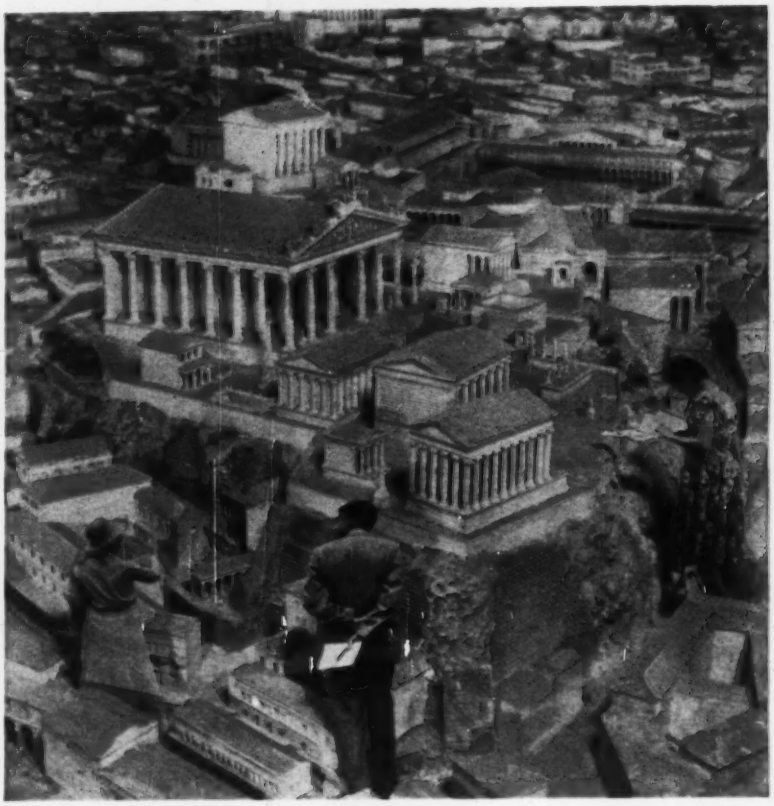
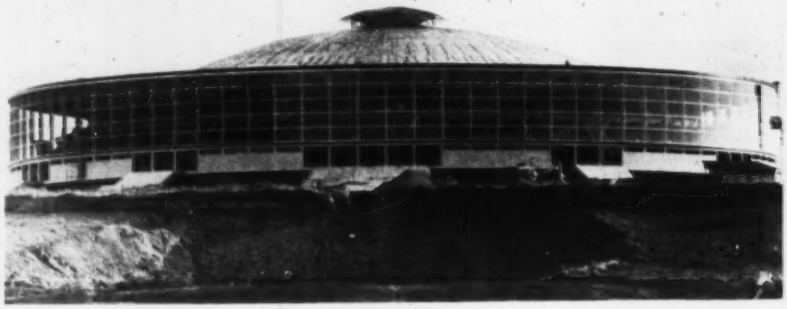


Back to Rome's Golden Age . . .

This plastic model of Rome at the peak of its golden age has been made to guide craftsmen in building an even larger "walk-through" version of the ancient city. The figures are cutouts set against the table model to indicate size of the project as it will be seen by tourists.

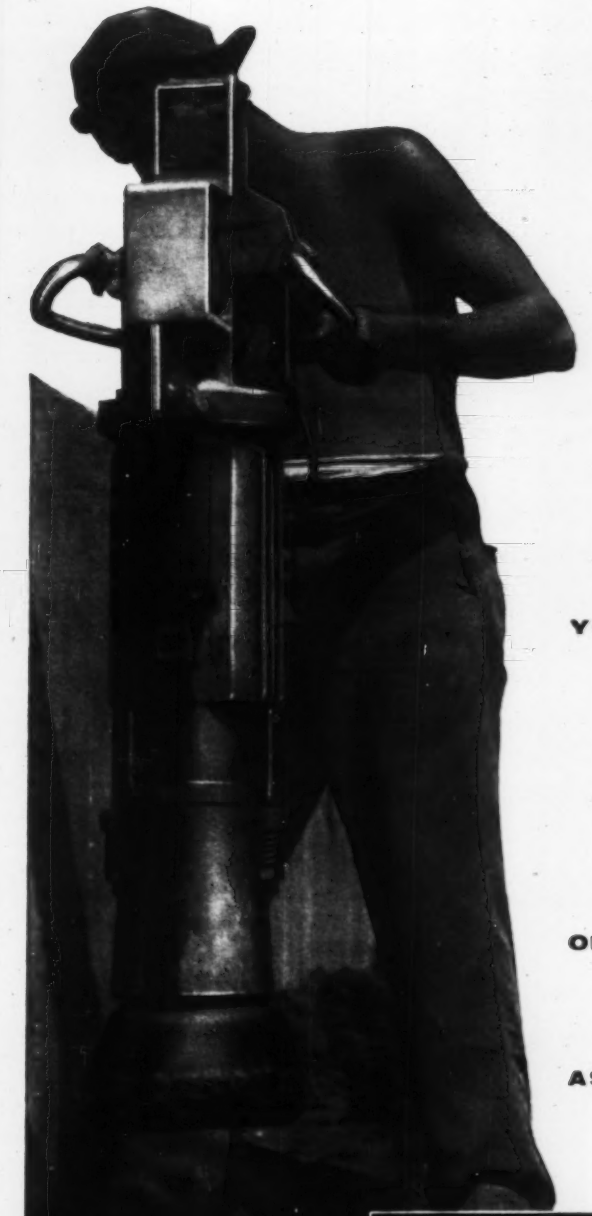


. . . Forward to the '60 Olympics

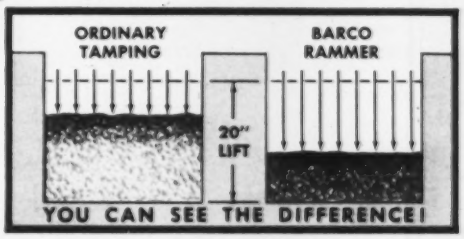
Construction is nearly complete on the Olympic Sports Palace in Rome. It is the key unit of permanent sports facilities under construction there. The circular, reinforced concrete building, with its steel framed dome, will be the site of most of the indoor events of next year's Olympic Games. Olympics were last held in Rome in 396 A.D.

(*International continued p.* 51)

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION



BARCO is the ANSWER!



YOU—can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Gasoline Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour. Economical to operate; economical to maintain.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

Sold and Serviced by the Nation's Leading Distributors

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

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Name _____

Company _____

Address _____

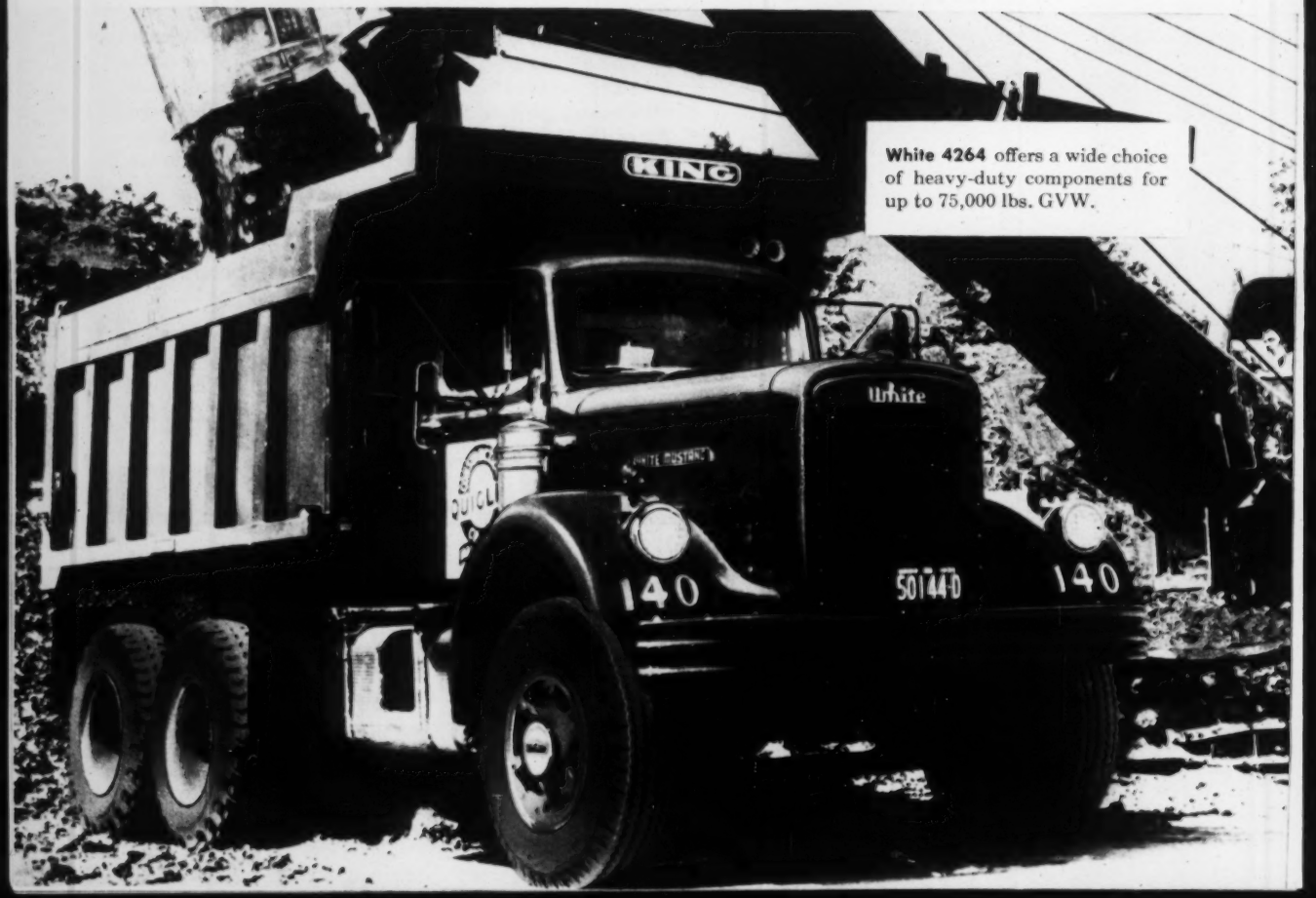
☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a DEMONSTRATION.

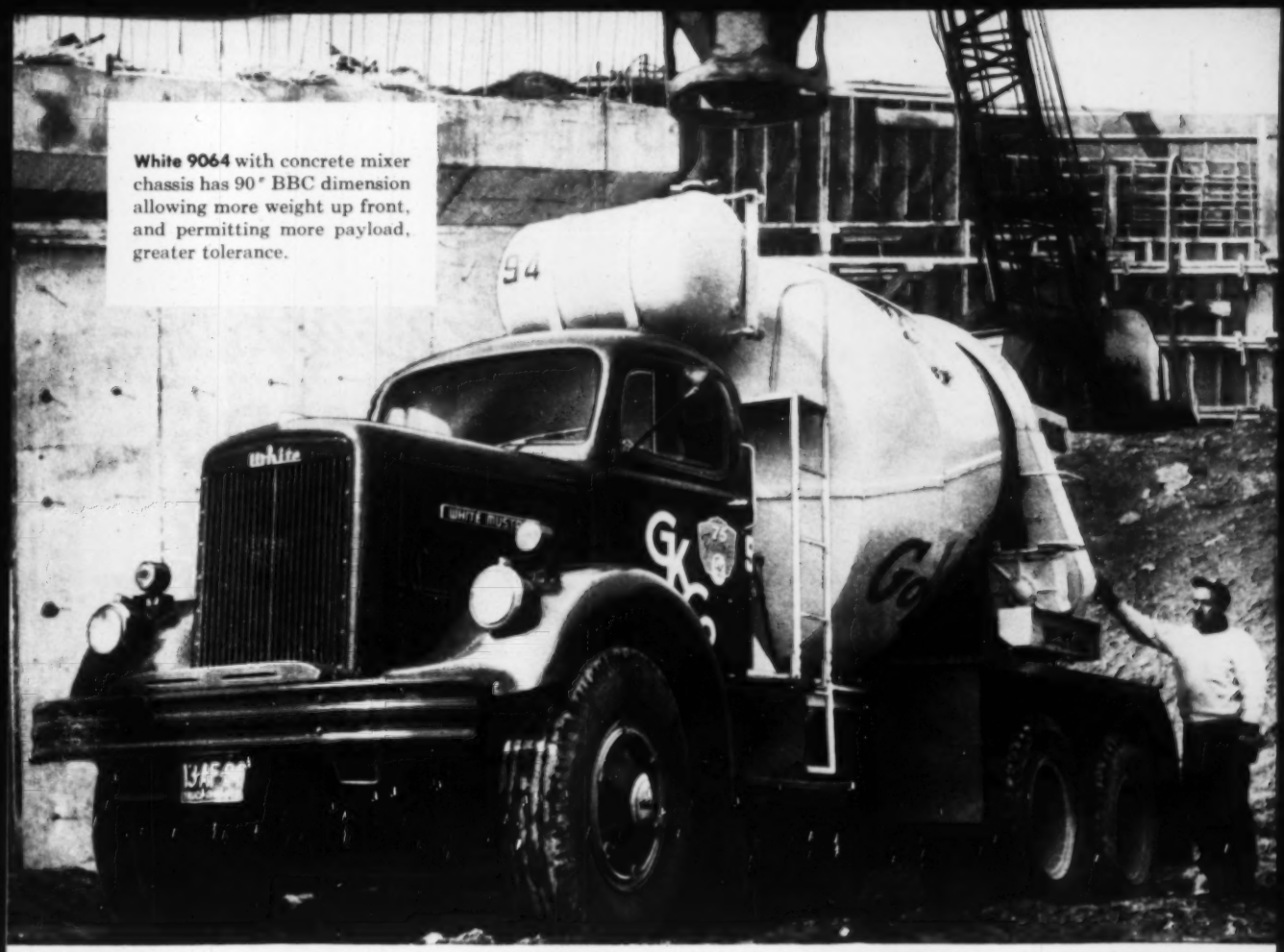
☐ Please send General Catalog No. 621.

☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

9064 model is the work horse of the construction industry. Available with either dump or concrete mixer chassis.



White 4264 offers a wide choice of heavy-duty components for up to 75,000 lbs. GVW.



White 9064 with concrete mixer chassis has 90" BBC dimension allowing more weight up front, and permitting more payload, greater tolerance.

New White tandems designed to give you a Competitive Edge

Rugged White tandems are designed especially for the construction business, and nobody builds them better than WHITE.

Your WHITE is built to your exact specifications to do the job you want it to do. To give top performance at the lowest possible operating cost.

THE WHITE MOTOR COMPANY
CLEVELAND 1, OHIO

Branches, distributors, dealers in all principal cities

White Gives You a Competitive Edge in Tandems Because:

Bigger payloads—husky 9064 models with their 90-inch dimension and shorter overall length give mixers up to a yard-and-a-half more legal capacity . . . permit more front-end loading on dump trucks. Ideal companion models are the 4264 tandems with WHITE's famed heavy-duty components for rugged construction service.

Greater maneuverability on and off the highway, with wider tread front axle, shorter turning radius.

More stamina with double-channel frame of chrome-manganese, heat-treated steel, tubular cross members, and all-nut-and-bolt construction.

Top economy with powerful, dependable MUSTANG engine; lower maintenance costs with rubber-bushed suspension system.

More efficiency with WHITE's customized engineering: each truck built for the specific job it has to do.

WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE

OBJECTIVE PERFORMANCE

. . . EFFICIENCY AND ECONOMY WITH

AURORA® *Heavy Duty*

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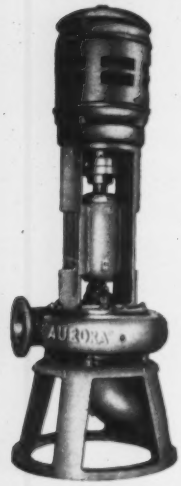


TYPE KUC VERTICAL—For compact installation with flexible coupling drive...motor high above floor.

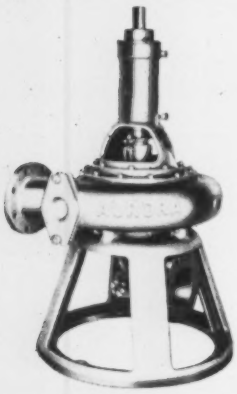
TYPE KCM VERTICAL—Utmost compactness...close-coupled design...low suction.

For handling heavy liquids . . . and solids in suspension. Ideal for public utility and industrial wastes.

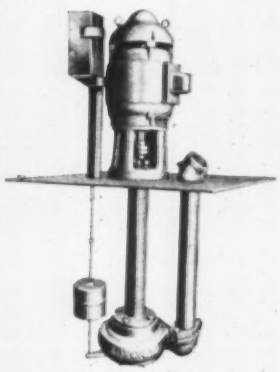
Capacities to 9000 GPM • Heads to 150 feet • Solids size to 6 inches

- Easy Installation
- Easy Disassembly
- Smooth—Quiet operation
- Hand cleanout provided in casings
- Detachable suction and packing covers
- Large Passageways
- Many optional features available
- Uniquely balanced impellers
- Engine or combination drives available
- Deep packing boxes

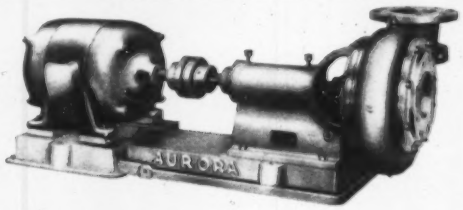
ALTERNATE IMPELLER DESIGN



TYPE KU VERTICAL—For flexible shaft drive...misalignment proof ...elevated motor protection against pit flooding.



TYPE KS VERTICAL SUMP—For heavy duty wet pit service. Complete unit engineered to specific pit requirements.



TYPE KGG HORIZONTAL—Rugged base mounted unit ...for use where suction conditions permit horizontal mounting.

ASK FOR...

MONO-VANE BULLETIN 121MV

NON-CLOG BULLETIN 121A

SUMP BULLETIN 104

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Aswan Second-Stage Design Goes to British Engineers

The Egyptian High Dam Authority has commissioned Sir Alexander Gibb & Partners to prepare detailed designs and specifications for the second stage of the Aswan High Dam project. The British firm did the first-stage design.

The second stage includes the main dam and power plant. Design will take about two years, according to T. A. L. Paton, senior partner in the Gibb firm. About 150 engineers will work on the job in London, he told Cairo newsmen.

Equipment for first-stage construction is scheduled to start arriving in Egypt from Russia this month under a $17-million UAR-USSR contract. The Soviets are also furnishing technical supervision and economic aid for the first stage. Over $4 million worth of equipment plus some concrete forms and explosives will be manufactured in Egypt, according to her public works minister.

El Salvador Inaugurates Parts of Coastal Highway

El Salvador recently opened to traffic three stretches, totalling 94 miles, of its $24-million, 171-mile Littoral Highway.

The highway, when completed, will run along El Salvador's Pacific coast from Guatemala to the Pan American Highway near the port city of La Union.

It will open up for agricultural development coastal lands that had not been used for lack of transportation facilities.

The project is financed by the International Bank for Reconstruction and Development and the government of El Salvador.

Soviet Engineers to Design Shipyard for Iraq Ministry

Iraq's Communications Ministry and the Soviet Techno-Export organization have signed an agreement in Baghdad on the design, supervision and erection of a shipyard in Iraq's Persian Gulf port of Basrah.

The yard will be able to build annually ten small cargo vessels of 800 tons each and ten river craft.

Soviet engineers are expected in Basrah soon to start work on the design and specifications and to estimate the cost of the shipyard.

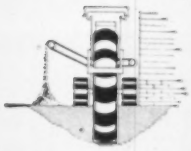
The project comes under the recently signed economic and technical aid agreement between Iraq and the Soviet Union.

(International continued p. 52)

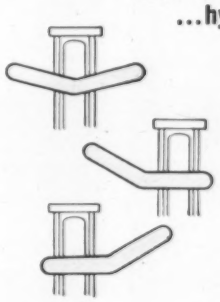
THE MACHINE for lower-cost digging

the CLEVELAND J-20 trencher

- less than 5' wide over its crawlers
- digs 13" to 24" wide, down to 5' 6" deep
- puts 24" trench within 20 inches of a parallel wall
- maneuverable full crawler mounting . . . perfect balance and stability, easy on lawns and sidewalks
- fast, accurate, clean, dependable . . . nothing digs trench like a Cleveland

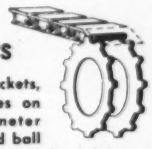


Cleveland's unique new V conveyor
. . . hydraulically shifted . . . independently driven



- digs past poles, trees, shrubs . . . places spoil where needed — without interrupting other operations
- lever at operator's seat controls hydraulic shifting and positioning of conveyor
- dual independent hydraulic drive gives operator fingertip control of conveyor belt direction and speed — independent of all other operations
- self-contained hydraulic motor and planetary gear drives in each head pulley eliminate all conveyor chains and sprockets
- provides constant elevating angle for faster, higher spoil discharge
- Maximum clearance under digging wheel rims permits higher heaped loads without clogging
- conveyor design reduces rolling and tumbling

world's finest trencher crawlers



. . . double flanged sprockets, rollers, wheels . . . drives on each end of 1½" diameter hardened pins . . . sealed ball and roller bearings . . . 1,000 hour lubrication . . . a tremendously long-lived, easy-rolling track.

hydraulic crumbing shoe

. . . optional, extra . . . pivots upward . . . fingertip control makes crumbing shoe advantages practical in crowded digging conditions.

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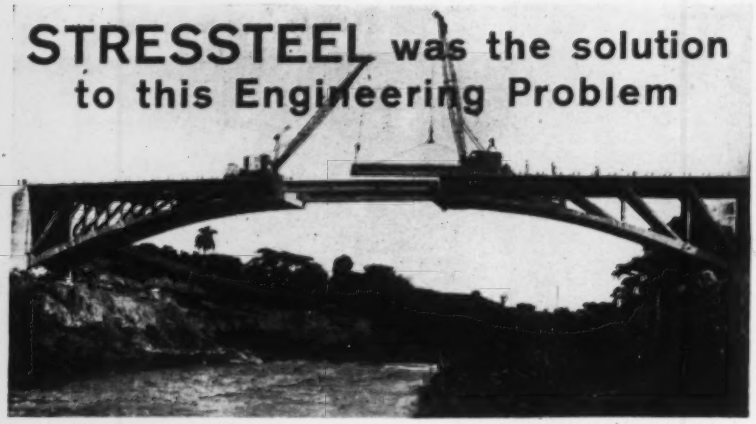

Zaza River Bridge—Comision de Fomento Nacional, Cuba. This unique bridge, just completed in Las Villas, for the first time uses precast and post-tensioned concrete to form cantilever trusses. Mario G. Suarez—Arango y Salas, Designers and Engineers. Cia. Territorial y Constructora Celo S. A., Contractor.

THE PROBLEM: How to prestress and assemble precast sections for a 300' cantilever concrete truss bridge with maximum efficiency and minimum cost.

THE SOLUTION: First, use STRESSTEEL Bars to post-tension the vertical legs of each precast panel. Next, use STRESSTEEL Bars to form the top chord of each panel and hold the truss together during erection and pouring of bridge deck. Finally, with additional STRESSTEEL Bars, post-tension the entire assembly of panels through the bridge deck to form an integrated truss.

Above—Truss panels precast at jobsite, one-on-top-of-other for accurate duplication.

Right—Assembling truss panels, with STRESSTEEL Bars forming the top chord of each truss.

Imaginative engineers now recognize that the use of light, precast concrete trusses for bridges and buildings offers a new and unexplored field in concrete technology. Rigid STRESSTEEL Bars, easily placed, connected and tensioned are ideal for these applications. These high strength bars are available in sizes from ¾" ⌀ to 1¼" ⌀ with recommended working stress for prestressing up to 90,000 psi. Equipped with wedge or threaded anchors, they offer effective solution to the special anchoring problems of precast units.

You will achieve superior results at substantial savings with STRESSTEEL because it is . . .

- High strength alloy steel
- Low in labor cost
- Low in initial cost
- Easy to tension

Are you working on an application combining precast concrete with post-tensioned prestressing? STRESSTEEL may well be the optimum solution. Ask us.

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. . . International

Big Suspension Span Planned for Lisbon

Portugal has a "competition" going for the design, construction and operation of a suspension bridge over the Tagus River, from Lisbon to Almada.

The bridge will be one of the big ones of the world. It must have a central span not less than 3,281 ft, side spans each more than 1,148 ft. Total length of the bridge will be 6,562 ft. River towers will be over 650 ft high. The bridge must sit a minimum of 230 ft above water at mid-river.

Roughly estimated at $28 million, the bridge will have to be built by a non-Portuguese firm with foreign capital. In return, it will operate and maintain the bridge, collecting tolls for a number of years.

The Portuguese Minister of Public Works is calling for and expects to open bids by the end of February, 1960.

Engineering Enrollments Drop Off in Canada

A drop in Canadian industry's demand for engineers has caused a sharp fall-off in the number of students enrolling for engineering studies at Canadian universities.

The number of first-year engineering students at the University of Manitoba dropped more than 30% below last year's level. The decline is 20% at Queen's University and 13% at the University of Toronto.

University registrars attribute the reduction to a tight job-hunting situation for engineers in Canada. Demand for engineers there reached a peak in 1956.

British Chemical Firm Plans $39 Million in Construction

British Titan Products Ltd. plans $39 million worth of new construction and expansion projects throughout the commonwealth.

Biggest expenditure will be for a $17-million titanium oxide plant in Canada. Neither location nor date are yet fixed.

Another titanium oxide plant will be constructed in South Africa and expansions are planned for existing plants in Australia, India and England.

Great Britain to Rebuild Malaya Air Base for Jets

Great Britain will spend $7 million to make Malaya's Tengah Air Base into "one of the world's finest jet airfields." Britain needs modernized fields to fulfill defense obligations to Singaport and Malaya.

New life... new job. As part of its rehabilitation program, Liberty works to retrain severely injured employees of policyholders. Men are interviewed and given IQ tests. Some are even sent to school to acquire new skills. Goal: to place rehabilitated persons in jobs that best suit them.

New look at injuries—new savings. Liberty retains some 75 leading orthopedic surgeons to check on complicated injuries to policyholders' employees. These specialists give expert assistance in diagnosis and treatment, help patients recover more quickly.

How safety engineering pays off. By checking for hazards on every phase of your job, Liberty's construction safety engineers can help you cut compensation costs. Hundreds of our construction policyholders have saved money this way.

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Protection in depth

to safeguard your people... to cut workmen's compensation insurance costs

If you have a series of bad accidents on your jobs, your compensation insurance costs can go up substantially. At Liberty Mutual, we can help you prevent loss and cut compensation costs by making available a wide range of extra skills and resources.

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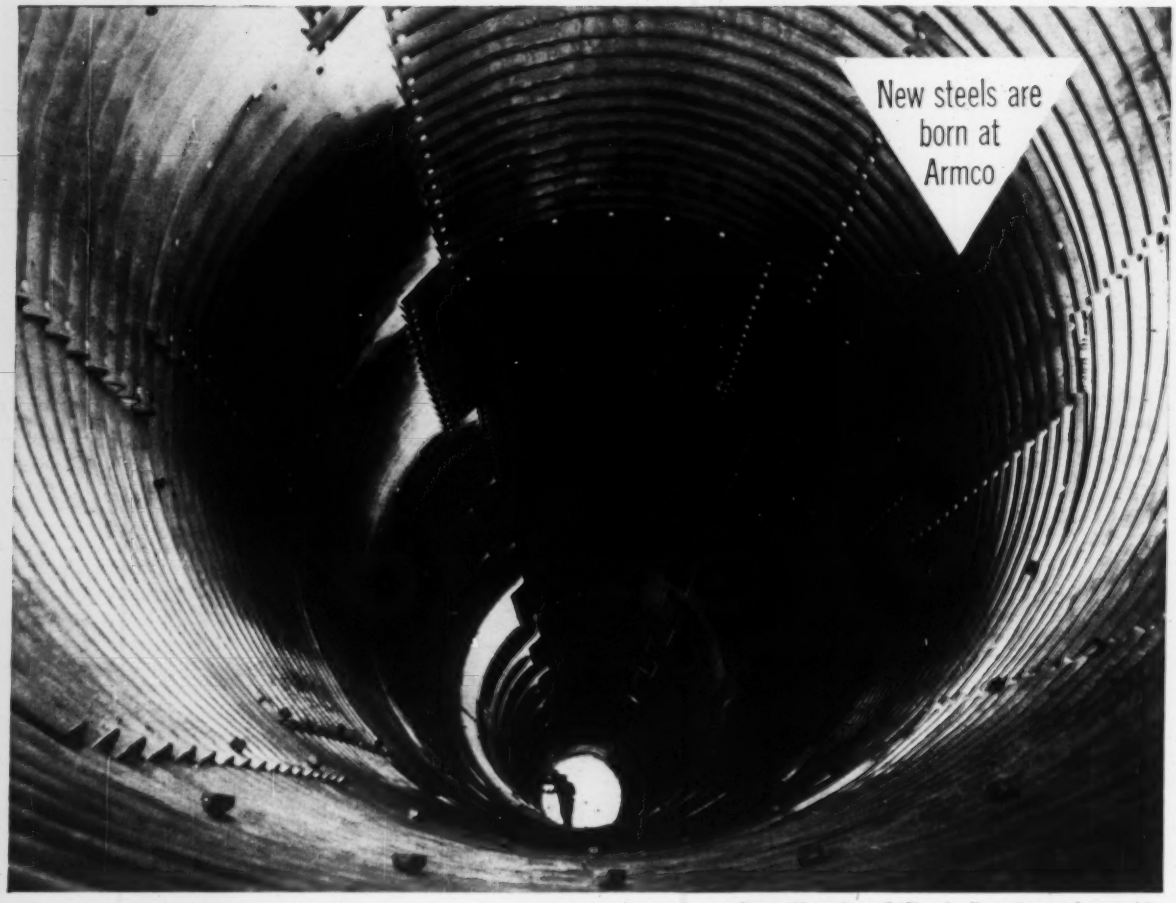

Armco MULTI-PLATE® Pipe in first stages of assembly.

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HERE'S A BETTER WAY TO BUILD

Bridge construction with Armco Corrugated Metal Drainage Structures offers three advantages you can measure. Consider these facts: Bridging a stream or ravine with an Armco Structure plus an embankment saves money. The "bridge" is mostly earth! Secondly, it saves time. Modern earth-moving methods make short work of backfill. Third, maintenance is practically eliminated. And Armco Structures have a 50-year record for durability. Write us for authoritative data or assistance with your construction problem. Armco Drainage & Metal Products, Inc., 6739 Curtis Street, Middletown, Ohio. In Canada: write Guelph, Ontario.

ARMCO DRAINAGE & METAL PRODUCTS

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The Armco International Corporation • Union Wire Rope Corporation

Big Discs Speed Work at Oahe

Some of the biggest discs ever built for harrowing saved time and equipment at the Army Engineers' Oahe Dam near Pierre, S. D. Harrows with 38-in. and 36-in. discs did a job in three passes that used to take 15 to 20 passes with scarifiers.

Western Contracting Corp., Sioux City, Iowa, used three of the machines to mix the fill the firm placed under a 13-million-cu-yd earthwork contract at the Missouri River site.

Bulldozers windrowed and leveled the sandy clay and shaly glacial till hauled from the borrow area. After rocks were removed the soil was bladed and watered. Then the discs went to work to mix it uniformly.

The wetting and mixing increased moisture content from 3% to 7% so rollers could compact the material to the required 95% of maximum density.

Instead of watering and mixing on the embankment, Western used prewetting extensively on its earlier Oahe contracts (the firm has held six out of seven contracts on the 90-million-cu-yd fill). But Army Engineers banned the practice at this stage for fear of slides in the tricky Pierre shale underlying the site (see also ENR July 23, p. 42). Their theory is that water might seep down into the fault planes lacing the shale and trigger slides by lubricating the thin layers of slippery bentonite clay separating the shale blocks.

Dished blades mix watered fill in place after pre-watering is ruled out.

The big harrows measure 21 x 11 ft over-all. Each contains four disc units. The units have eight blades on 16-in. centers supported by a framework of steel plates and angles. Blades are of ⅜-in. high-carbon steel plate. Each is equipped with a ⅜-in. stationary scraper blade of abrasion-resistant steel plate that cleans the lead side of the cutting blade.

The blades can handle lifts 12 in. deep. The operator regulates angle and depth of cut by a cable control between tractor and harrow. Best results at Oahe were achieved with the blades at a 20 to 30-deg pitch.

Towner Mfg. Co. of Santa Ana, Calif., built the harrow. Bethlehem Pacific fabricated the blades in its San Francisco shipyard.

Should You Remodel or Build Anew?

Debating whether to remodel an old building, or raze it and build a new one in its place?

A recent survey conducted by Pittsburgh Plate Glass Co. brings to light some cost and construction considerations to guide your decision.

A remodeling project offers some immediately obvious substantial financial savings. You save on excavation, structural framing and probably floor slabs and roof. To that you can add demolition costs, relocating major sewage or utility lines and other special situations.

But despite these advantages, there are these other requirements a building should meet to justify remodeling:

• **Location**—Is the old building still situated in a good commercial district? What of the area's future? It will take a number of years to equalize the remodeling investment.

• **Existing space**—Is the building suitable to new space requirements. Can additional floors be added? Or can a new section be built adjoining the old?

• **Structural soundness**—Is the frame of the building fireproof structural steel or reinforced concrete? A set of original blueprints can help here.

• **Financing**—Does the lending agency concur that remodeling seems a wise investment?

• **Building codes**—Does your local building code accommodate a remodeling project. There may be certain restrictions that must be provided for in the preliminary planning and design.

The amount of money invested in previous interior renovation work, an extremely good location or other specific factors may still favor remodeling even if the building doesn't qualify on all the above five points. But if the old building doesn't qualify for any of them, the rewards of remodeling are most likely unjustified.

Favorable cost comparisons for four remodeling projects were pointed out.

The Vulcan Building in Cleveland was one. Today the estimated cost of erecting a new six-story building in that area would be $1.6 million. The remodeled building, two stories higher, cost $600,000 less.

The engineer of Ohio Edison's General Building in Akron estimates that a new building would have cost approximately $20 to $22 psf. The remodeling actually averaged about $13 psf.

The National Education Association Building, Washington, D. C., is a structure on which remodeling is being carried to the ultimate. An existing seven-story office building erected in 1930, was completely gutted, leaving only the structural steel frame and floor slab. New structures were erected on either side of this building and the three stages are being integrated into a single office building. The decision to save the building, says the architect, was prompted by the financial savings, structural soundness and the ability to tie it in successfully with the rest of the project.

The Exchange-Security Bank project, Birmingham, Ala., points up the business-as-usual advantage of remodeling. In this instance, several commercial business and professional tenants would have been dispossessed for an extended time had the old building been razed. Refacing the exterior, and interior improvements did not interrupt daily business.

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HYDRAULIC DREDGING

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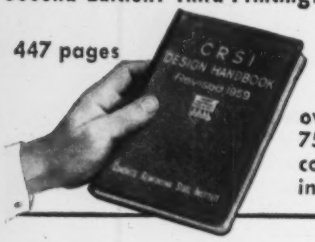

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New Products

Blacktop Spreader for Tractor

A blacktop spreader attachment installs on the Work Bull 1001 tractor shovel. It can work with hot or cold asphalt or oil mix, with crushed rock or aggregate up to ¾-in. size.

The spreader is recommended for patching and small paving jobs. It works off the tractor's hydraulic system through a hydraulic motor of its own.

There are independent hydraulic controls for each operation including height adjustment of the pneumatic tires.

The spreader can be adjusted to widths up to 8 ft and thicknesses up to 6 in. Hopper has a 2-cu-yd capacity. Butane heater is available as optional equipment. Massey-Ferguson Industrial Division, Block 1000 S. West St., Wichita 13, Kan.

Disks Reduce Surface to Bits

It takes one or two passes through most scarified oil road surfacing with a Rome disk plowing harrow to reduce material to aggregate size for blending.

To reclaim, a chuck-holed oil road is first ripped with a motor grader scarifier; the harrow makes its passes; material is bladed and leveled with the grader, rolled to smoothness and density and oiled if necessary. Rome Plow Co., Cedartown, Ga.

(*New Products continued p. 61*)

More Proof that the Better Value is

REYNOLDS ALUMINUM

The new REYNOLDS ECONO-WALL SYSTEM 202 specified for this building provides a multi-story wall having all the advantages of stock units, yet permitting wide variation in design. The insulated wall panels fit three stock window modules and are available in a choice of porcelain enameled and baked enameled finishes. Mullions offer a range of structural capacity. Installation of windows and pre-framed panels erected from the inside minimizes construction time. This is an economical and highly efficient system for schools, office buildings, apartments and many other high-rise structures. For full details write Reynolds Metals Company, Dept. AM-4, Richmond 18, Virginia.

REYNOLDS NEW MULTI-STORY ECONO-WALL SYSTEM 202!

Residence Hall, Zeckendorf Campus, Long Island University, Brooklyn, N. Y.

ARCHITECT:
S. J. Kessler & Sons, New York, N. Y.

GENERAL CONTRACTOR:
Leon D. DeMattels & Sons, Inc., Elmont, N. Y.

CURTAIN WALL ERECTOR:
Steeleet Corporation, New York, N. Y.

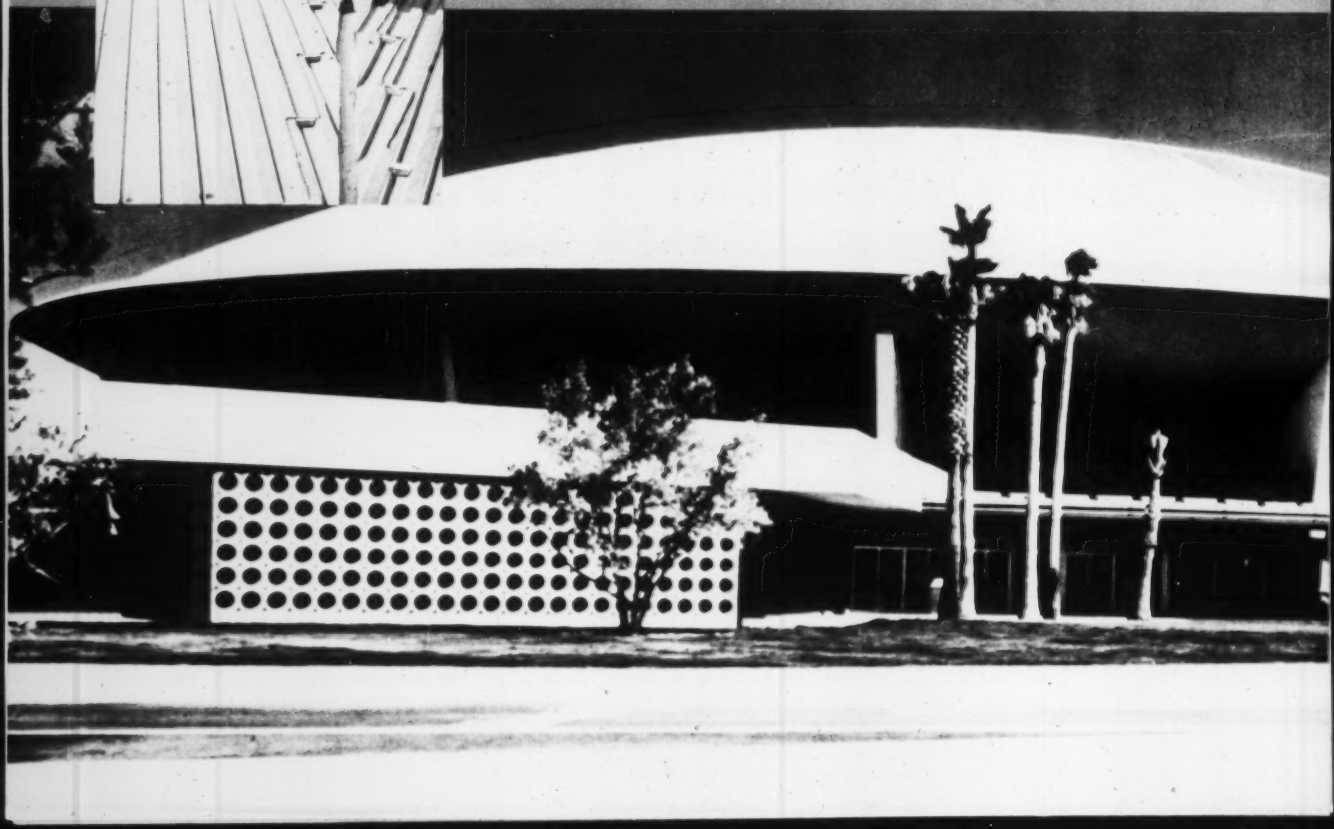
Porcelain enameled aluminum panels by Erie Enamelling Company, Erie, Pa.

75,000 sq. ft. aluminum parasol covers this Un-Conventional Center...

Reynolds Aluminum 4" Ribbed Embossed sheet covers this unique $6 million structure destined to make Las Vegas the Atlantic City of the West. Circular area, flat, is more than 75,000 sq. ft. Sheets in 20 ft. lengths were applied with 8" end lap and two-rib side lap, laid radially and parallel in equal spherical segments, joined on sixteen radial lines and secured to the steel building frame.

Completely air conditioned, the Center includes a 7,500-seat Assembly Hall and can accommodate a total of 20,000 persons in its complex of rooms. Cost of air conditioning is drastically reduced by the heat reflection of the aluminum "parasol" and by the hung ceilings which cut total interior volume by about half.

In advanced architectural concepts like this as in the low-cost, high-efficiency buildings of industry, the better value is Reynolds Aluminum. For information and illustrated folders on Reynolds Aluminum commercial building products, write to Reynolds Metals Company, Dept. AM-4, Richmond 18, Virginia.



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Commercial Field-Assembled Insulated Wall System. A wide variety of exterior wall treatments, offering both interior and exterior surface variations.

Ribbed Embossed Siding. Baked enamel colors available. 4" or 8" ribbing. Variety of thicknesses and lengths.

Corrugated Roofing and Siding. Mill finish or embossed. Baked enamel colors available. Variety of thicknesses and lengths.

Roof Deck. Economical, rust-proof. Unmatched by any similar product. Variety of thicknesses and lengths.

V-Beam Roofing and Siding. Mill finish or embossed. Variety of thicknesses and lengths.

LAS VEGAS CONVENTION CENTER

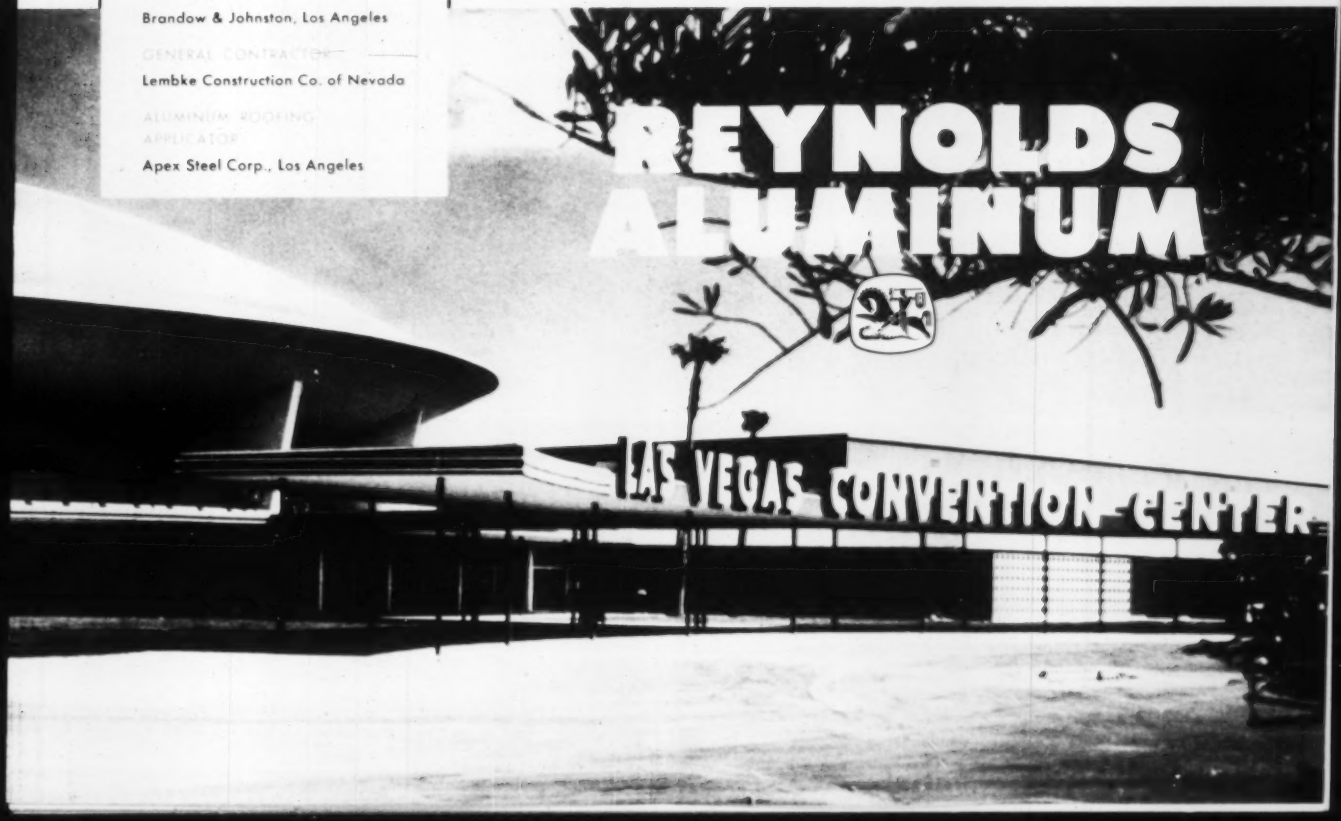
— a project of the Clark County, Nevada, Fair and Recreation Board.

ARCHITECT
Adrian Wilson & Associates, Los Angeles

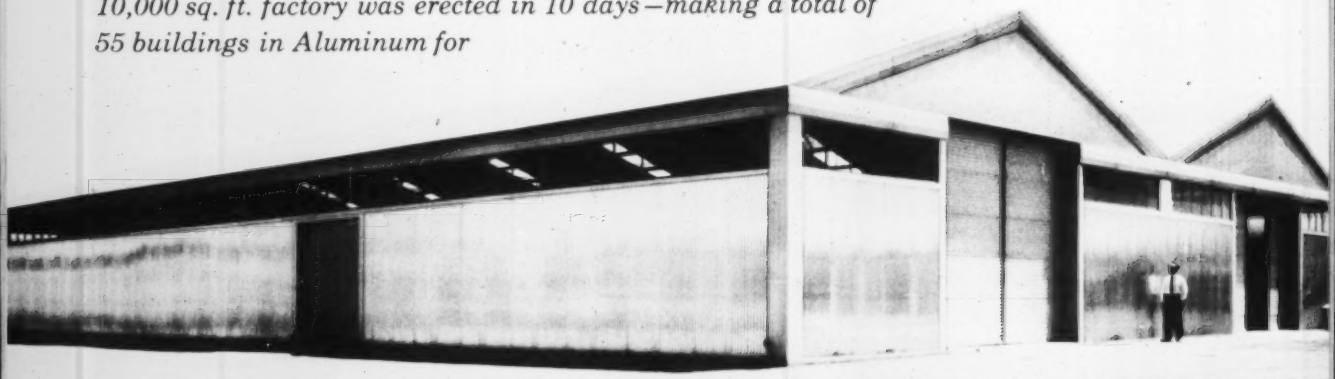
STRUCTURAL ENGINEER
Brandow & Johnston, Los Angeles

GENERAL CONTRACTOR
Lembke Construction Co. of Nevada

ALUMINUM ROOFING APPLICATOR
Apex Steel Corp., Los Angeles



With Reynolds Aluminum roofing and siding this 10,000 sq. ft. factory was erected in 10 days—making a total of 55 buildings in Aluminum for



EL CAJON INDUSTRIAL PARK

The roofing and siding you see here is Reynolds Aluminum Commercial Corrugated — and it's what you would see on *all* the buildings in rapidly growing El Cajon Industrial Park! It's Reynolds Aluminum for initial economy and lowest maintenance. It's Reynolds Aluminum for heat-reflection, where temperatures stay around 100° for months on end. And it's Reynolds Aluminum for modern appearance, too — with the extra touch of cornices prefabricated from embossed sheet. This 500-acre tract of buildings ranging from 10,000 to 100,000 sq. ft. is a tribute to the vision of designer and builder Thomas W. Jackman, who turned a cow pasture into a booming industrial development.

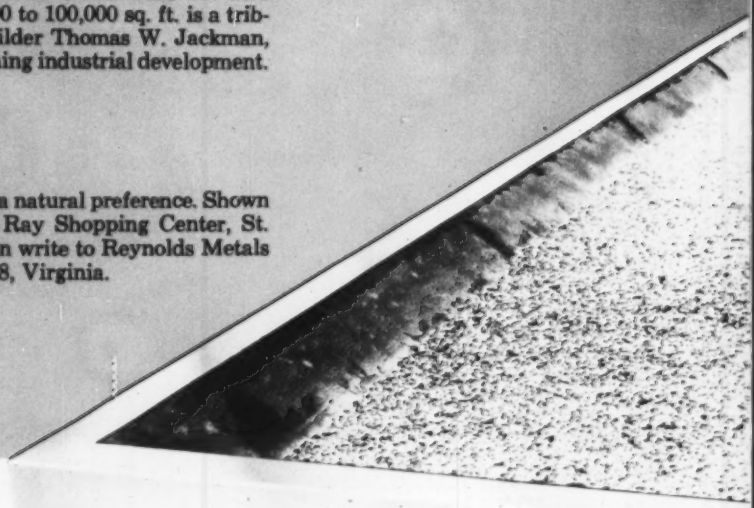
DESIGNER:
Thomas W. Jackman, El Cajon

BUILDER:
Jackman Steel Construction Company, El Cajon

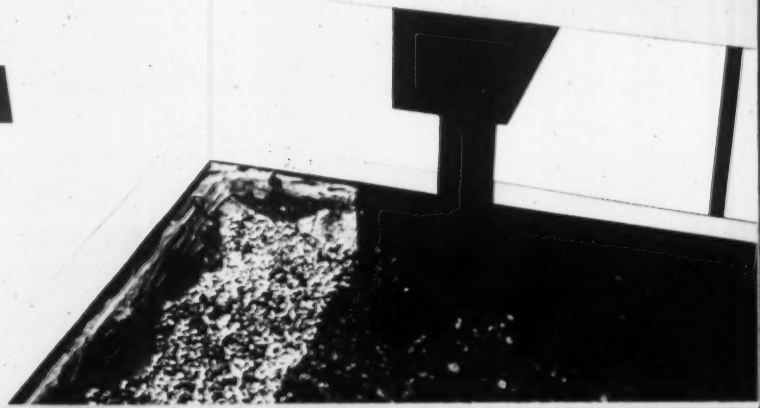
Aluminum supplied by Western Metals Supply Company, San Diego

COPINGS AND GRAVEL STOPS

of rustproof Reynolds Aluminum are a natural preference. Shown is a typical installation at the Sun Ray Shopping Center, St. Paul, Minnesota. For full information write to Reynolds Metals Company, Dept. AM-4, Richmond 18, Virginia.



REYNOLDS ALUMINUM



See Reynolds shows: James Michener's "ADVENTURES IN PARADISE" Monday nights and "ALL STAR GOLF" every Saturday ABC-TV Network

Electronics Moves In, Service Islands Move Out

Designers can get away from service "island" in laying out gasoline stations, according to the makers of the Bowser Modular Electronic Fueling System.

Aside from a standard remote pump at or near the underground storage tank, there are three basic elements in the MEF system—an in-line electronic flow meter, an electronic control unit and an electronic computer-indicator. Main idea is to break up the standard pump-meter-control combination and let designers put the various parts where they'll do the most good.

The manufacturers point out that automatic central office bookkeeping, inventory control and a variety of other retail and wholesale operations may be designed into the electronic fueling system. BOWSER, INC., 33 NORTH LA SALLE, CHICAGO, ILL.

Vibrating Soil Compactor Packs Fill Down Tight

The 630-lb VR13W vibrating compactor is said to produce a soil compaction equal to that provided by a 16-ton static roller.

A self-propelled, high frequency vibrating machine, the 13-in.-wide compactor is designed for backfilling in close quarters. It is recommended for high density asphaltic compaction on highway maintenance and patching jobs.

The compactor is powered by a 4.8-hp air-cooled motor. It is equipped with a clutch that allows the roller to be used without engaging the vibrating mechanism. The hand-guided compactor can go up to 1 mph either forward or reverse. ESSICK MFG. CO., 1950 SANTE FE AVE., LOS ANGELES 21, CALIF.

Single Lever Control For Front-End Loader

A single lever controls speed and direction on the Model TL-20 front-end loader.

The six-speed machine is powered by a 130-hp diesel, weighs 23,150 lb and has a carrying capacity of 9,000 lb.

Six buckets, from 2¼ to 5 cu yd, are available. Bucket tips back 40 deg at ground level for loading. Maximum dumping clearance under the hinge pin is 11 ft 1 in.

Rear-wheel power steering, four-wheel power brakes and parking brake are fitted on the loader. It also has a bucket level indicator, rear-axle disconnect and ignition-key starting. ALLIS-CHALMERS MFG. CO., DEERFIELD, ILL.

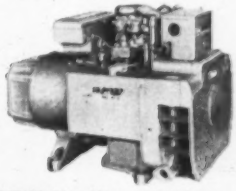
Onan NEWS REPORT

Mobile Onan Electric Plants keep road project on schedule

Onan 35,000-watt electric plants and telescoping light towers on skid mountings, floodlighted acres of work area on this Federal highway job. With these units, trucks, scrapers and loaders worked around the clock, almost tripled progress per day, helped finish the contract on time.

Operating a night shift with dependable, economical floodlighting from Onan plants will help you beat contract deadlines. But it will do more than that. Making a night shift a regular part of your operations can improve your profit picture by getting more work out of your big investment in machinery. Onan Electric Plants give you brilliant, safe, night lighting that helps maintain daytime efficiency.

Built in sizes from 500 to 230,000 watts, Onan plants will power any system of lighting you need . . . skid-mounted towers, truck-mounted floodlights, 4-wheel or 2-wheel trailer-mounted floodlight units. And they supply power for electric maintenance tools and communications, too.



SERIES CW—7½ or 10KW. Onan two-cylinder, smooth-running air-cooled gasoline engine. Drip-proof, all-climate generator.

SERIES 4087—40KW Onan Magneciter Generator. 8-cylinder, heavy-duty, water-cooled gasoline engine.

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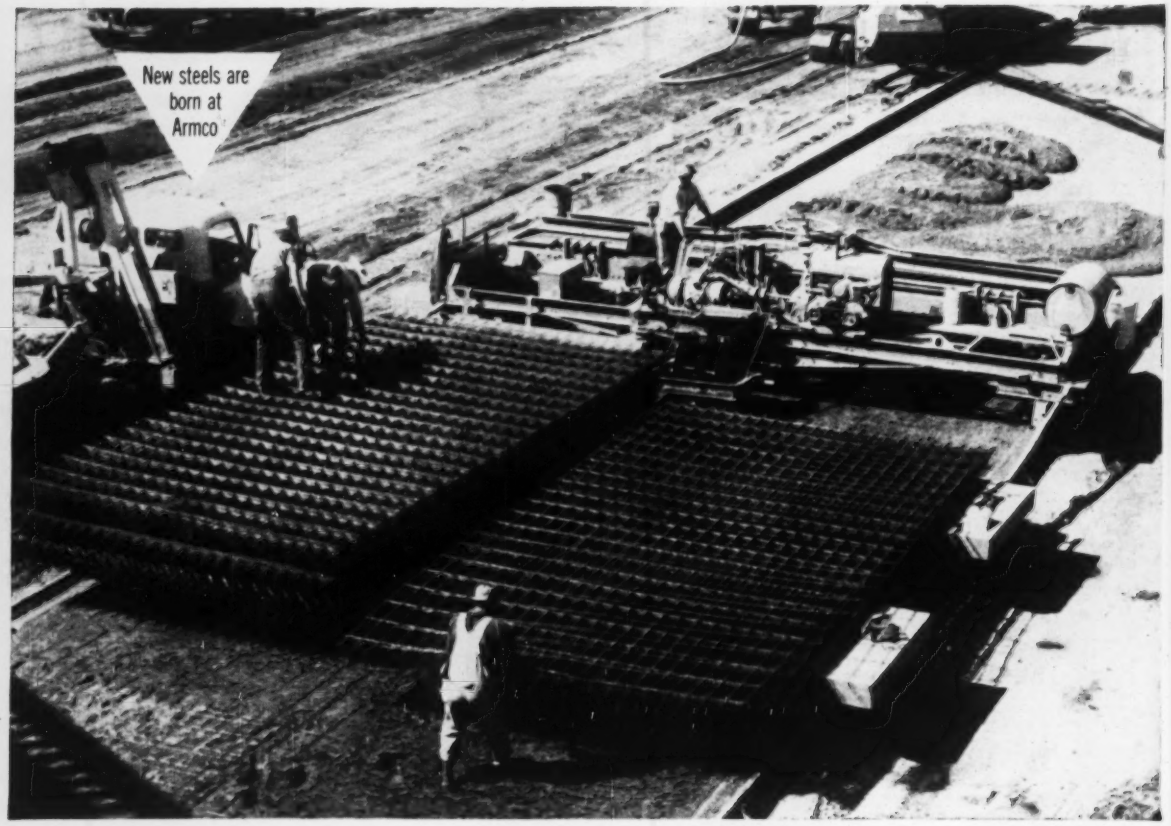
Onan ELECTRIC PLANTS

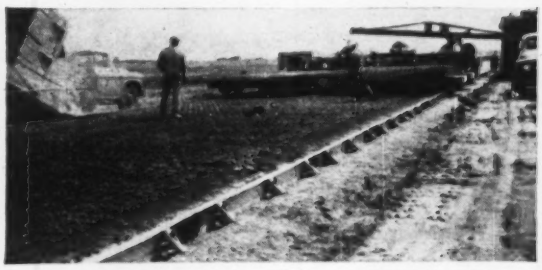


Backbone of steel for a $50 billion job

A few years ago, obsolete and inadequate highways threatened to strangle the nation. Today we're on the way to the greatest network of roads ever conceived. Goal: safe, smooth, swift highways built to handle the 90 million cars that will be rolling by 1975, on fifty billion dollars worth of highways.

Such roads must have a backbone of steel. Sheffield is a major supplier, with Sheffield Welded Wire Fabric. Even before the national highway program got under way, Sheffield had stepped up production to meet future needs. Now, even more demand can be handled from Sheffield's new rod mill — the fastest in the world.

Whether you're working on the highway program or on other construction, you can be sure of on-schedule delivery of Sheffield Welded Wire Fabric and other steel products, in any quantity. Our strategic plant locations give you important advantages. Get all the facts from your nearest Sheffield office.



Pouring train trailer speeds slab construction. Stacks of Sheffield Welded Wire Fabric are loaded on the trailer by traveling crane. Only one man is needed to start the steel into position. Eliminated: the slow, four-man job of carrying steel from road shoulder.

SHEFFIELD DIVISION

ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Men and Jobs

D. S. Walter Retires From Bureau of Reclamation

Donald S. Walter has retired from the Bureau of Reclamation after 40 years service. Since 1949 he has been regional engineer for the Northwest district, where he directed the Columbia Basin and Yakima projects in Washington.

Mr. Walter was involved in the Hungry Horse Dam in Montana, the Deschutes and Crooked River project in Oregon and the Palisades and Minidoka projects in Idaho. He was construction engineer on the Anderson Ranch Dam in Idaho and also worked on the Grand Coulee, Hoover and Friant dams.

A graduate of the University of Colorado, he joined the Bureau as a chairman on a survey party working on the Riverton project in Wyoming.

J. J. Closner To Direct New York City Company

J. J. Closner has been named president of the Preload Co., Inc., New York City.

Mr. Closner joined the organization in 1949. Before his recent appointment, he was vice president in charge of sales and operations. He has also been Southwest district manager and assistant general manager.

Mr. Closner directed construction on the approach spans of the Lower Tampa Bay Causeway and the 300-ft-dia dome over the Sports Palace in Havana. The Tampa Bay project was one of the first major prestressing jobs in the country.

Howard Jacoby Organizes Computer Services Firm

Jacoby & Associates, Inc., a new firm offering electronic computer and aerial photogrammetry services, has opened offices in Hicksville, N. Y.

Howard Jacoby, president and chief engineer of the new company, was formerly chief computer services engineer of Photronix, Inc., of Columbus, Ohio, and before that, a senior editor of Engineering News-Record.

Careers

Business

Walsh Construction Co., New York City, has formed an architectural-engineering division. **A. A. Kirby** has been named manager. **L. W. Kennelly** heads the Boston district office.

Robert R. Porter has been elected chairman of the board of Keasbey & Mattison Co., Ambler, Pa. He also continues as company president. Mr. Porter came to Keasbey & Mattison in 1955 from Ford Instrument Co., Long Island, where was vice president.

E. L. Foerster has opened a consulting chemical engineering office in Danville, Pa. He is specializing in bioengineering, waste disposal and chemical process development.

Charles Rinderle Jr. has been elected vice president of Southwest Steel Rolling Mills, Los Angeles.

David C. Slipher has joined Kaiser-Burns development Corp. as a vice president. Mr. Slipher, noted home builder and community developer, is assisting in the planning and development of Hawaii-Kai, the new $350-million, 6,000-acre residential and resort community in Honolulu. Since 1956 he has been president of Webb & Knapp Communities, Inc., New York City.

Sandwich-type panels for home construction are now available to west coast builders for the first time. **Nels G. Severin** and **Daniel B. Grady**, executives of the Severin Construction Co., are producing and distributing the panels through a new company, Dyacor Products, Inc.

Bertram S. Warshaw has opened a consulting office for structural, civil and architectural engineering in Miami, Fla.

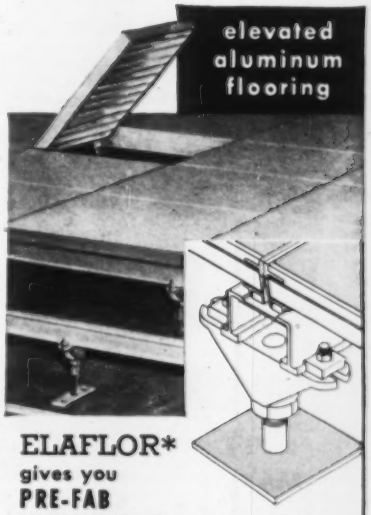
Robert V. Peaslee is vice president of the Ralph M. Parsons Co., Los Angeles engineers and constructors. He will work in the New York office. Formerly, Mr. Peaslee was vice president of C. E. Bruan Co., Los Angeles.

Cabot, Cabot & Forbes Co., Boston, has formed a new subsidiary, **Cabot, Cabot & Forbes Associates, Inc.** The new group will provide site planning and architectural and engineering services offered under the CC&F package plan program. President of the subsidiary is **Ambrose Burton**, a vice president for the parent company and also president of Aberthaw Construction Co.

Frank C. Haas, former vice president and director of the Archer-Daniels-Midland Co., heads the new chemical division of the Lee Wilson Engineering Co., Inc., Cleveland.

Stone & Webster Engineering Corp., Boston, has appointed three new assistant vice presidents. **Robert S. Boyd** is appraisal manager and **J. Marshall Hamill** is administrative assistant, both working in Boston. **Wilbur S. Roberts Jr.** is manager of new business activities in New York City.

(*Men and Jobs continued p. 64*)



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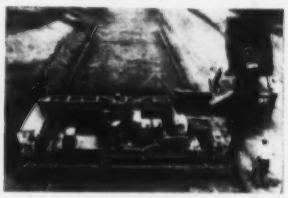

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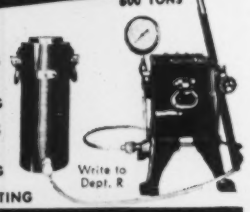

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. . . Men and Jobs

Education

Vincent J. Roggeveen and **William Weaver, Jr.** have been appointed to the faculty of Stanford University's school of engineering.

Mr. Roggeveen, an associate professor, is a specialist in engineering administration and transportation. He comes to Stanford from MIT, where he was assistant professor and assistant director of highway research. He holds a master's degree in civil engineering.

Mr. Weaver, a specialist in structural engineering, has been named assistant professor. A graduate of MIT, he has been with a structural consulting firm in Sacramento.

Bernard G. Neal is visiting professor of engineering at Brown University. He is a professor at Swansea University, England, and the author of "The Plastic Methods of Structural Analysis."

A. T. Liu has been named dean of the college of engineering at Detroit Institute of Technology. He has been project director of Giffels & Rossetti, Inc., Detroit architectural and engineering firm. Mr. Liu graduated from Chiao-Tung University, Shanghai, and received his doctorate at the University of Michigan. Before the Communists took over, he directed an American-Chinese firm building factories and power projects throughout the country.

Winston H. Carrington is on the engineering faculty at Arizona State College. For the past 10 years he has been a highway engineer in Harrisburg, Pa.

Dennis E. Sheehy takes over as general manager of the Western National School of Heavy Equipment Operating, Weiser, Idaho. He has been associated with Western Equipment Co., and Morrison Knudsen Co., both of Boise.

Honors

Norman M. Pritchett, chief engineer for the Maryland state roads commission, has received a Samuel A. Greeley Service Award. The award is given by the American Public Works Association to men who have served a single organization for 30 years. A native of Baltimore, Mr. Pritchett joined the commission as a junior engineering aide.

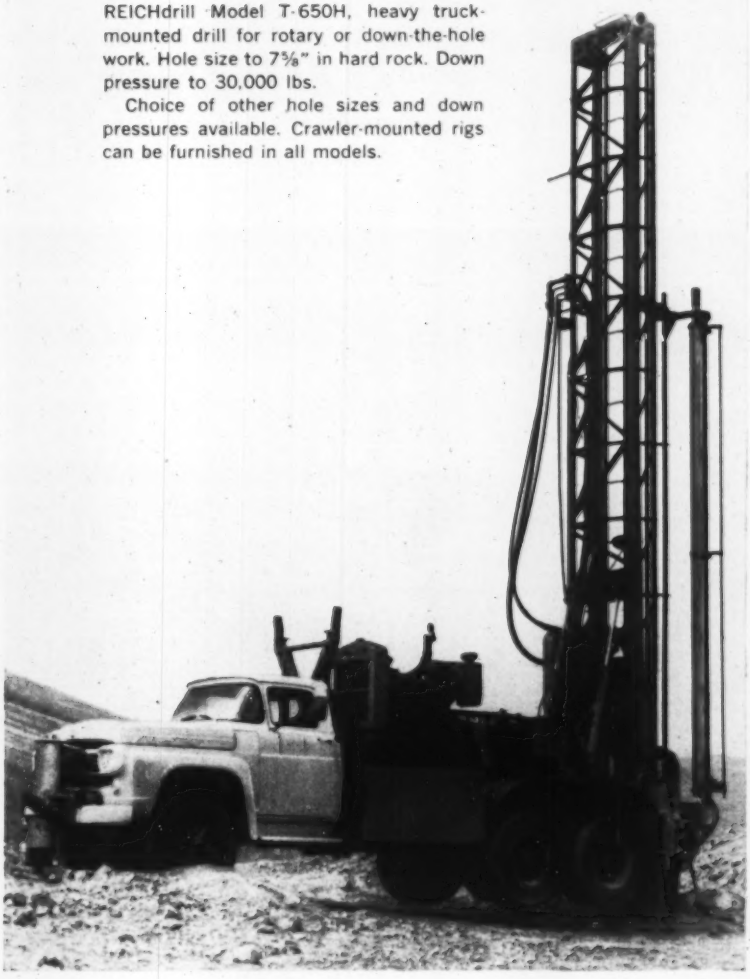
Archibald T. McPherson has been awarded the department of commerce's gold medal for exceptional service. Mr. McPherson is noted for his work in improving the standardization activities in the National Bureau of Standards. In 1951 he became the bureau's associate director for engineering and supervised all work in mechanics and building technology.

WHEN YOU RUN A **REICHDRILL** YOU'VE GOT A RIG THAT IS **ALL-HYDRAULIC** AND FEATURES **TOP-DRIVE**

Drillers get "more hole per hour with a REICHdrill" because . . .

REICHdrill Model T-650H, heavy truck-mounted drill for rotary or down-the-hole work. Hole size to 7⅝" in hard rock. Down pressure to 30,000 lbs.

Choice of other hole sizes and down pressures available. Crawler-mounted rigs can be furnished in all models.



ALL-HYDRAULIC TOP-DRIVE MEANS:

1. Infinitely variable speed of drill rotation from zero rpm to maximum rated speed of model—permits the right rotational speed for every formation.

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And the REICHdrill offers these outstanding advantages: Dependable heavy duty CP Compressors supply plenty of air to suit demand . . . Fast-acting, ram-type hydraulic levelling jacks . . . CP "Air-Blast" Bits give you extra footage in the toughest formations . . . Angle drilling—operator simply sets correct angle and drills.

Write for full information on REICHdrills, today!

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NEW FROM DODGE FOR 1960

The thriftiest trucks, in the widest tonnage range, Dodge has ever built . . . including totally new cab-forward models with diesel or gasoline engines.

Name your job. There's a Dodge truck to do it. For Dodge has never had a line-up as great as this new 1960 truck platoon. Spirited panels and pick-ups that deliver up to 200 horsepower. Rugged stakes with up to 19,500 lbs. G.V.W. Husky 4-wheel-drive models with wheelbases from 108″ to 174″. All these and more make Dodge your smartest choice for efficient, low-cost hauling. And in the heavyweight class, Dodge introduces a completely new line of cab-forward models, trucks engineered to put real muscle into your biggest jobs, trucks whose new Servi-Swing fenders open with a simple latch and allow you to walk right up to the engine! See your Dodge dealer. He'll be pleased to give you the full Dodge truck story for 1960.

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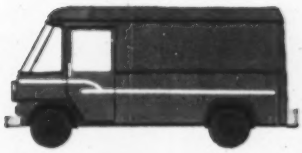
"JOB-RATED" FROM 4,250 LBS. G.V.W. TO 76,800 LBS. G.C.W.

SWEPTLINE pick-ups head their class in looks; lead in load space, power. 4-wheel-drive optional.



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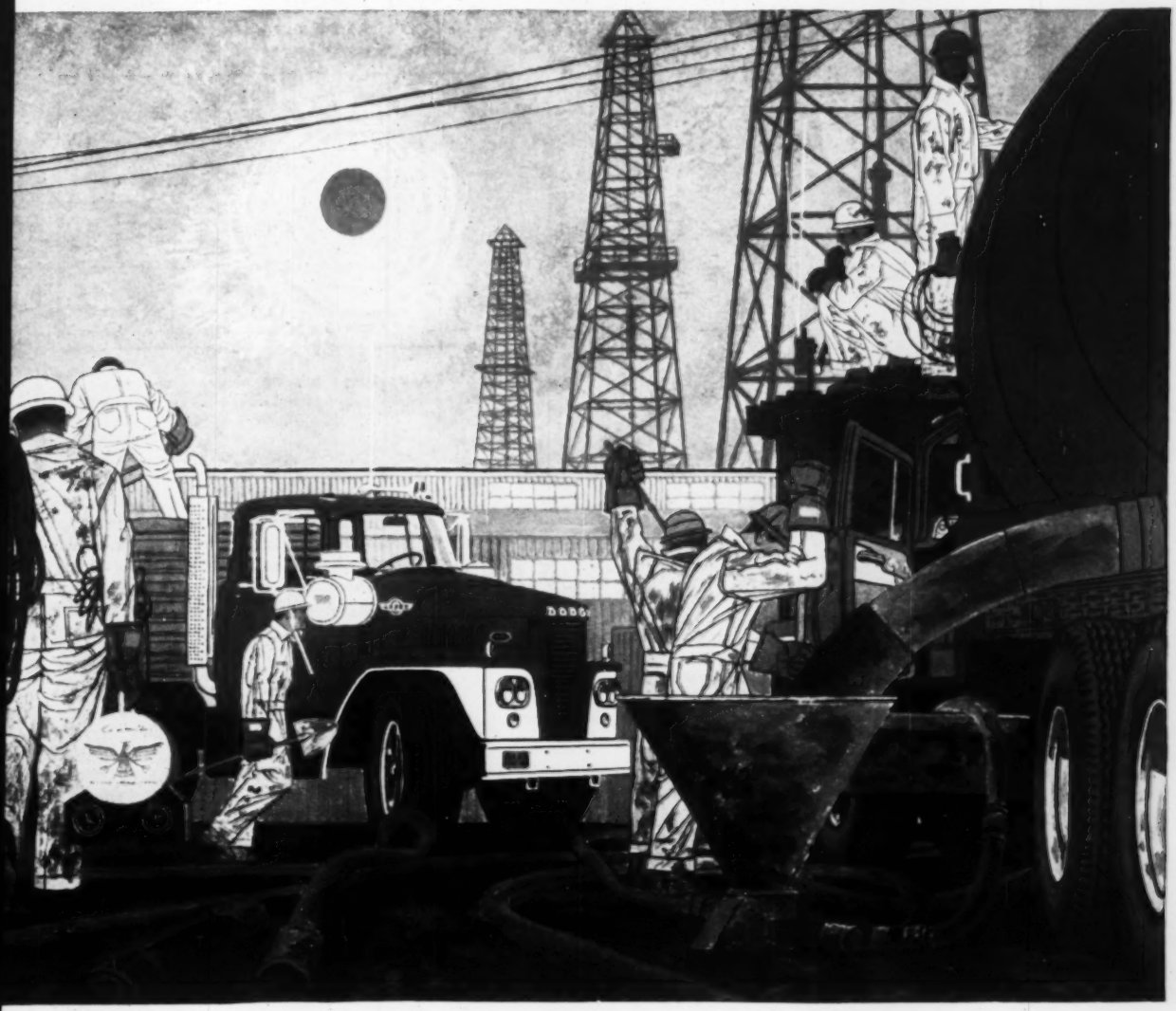
STAKE bodies from 7½′ to 14′ are built by Dodge on models to 19,500 lbs. G.V.W.

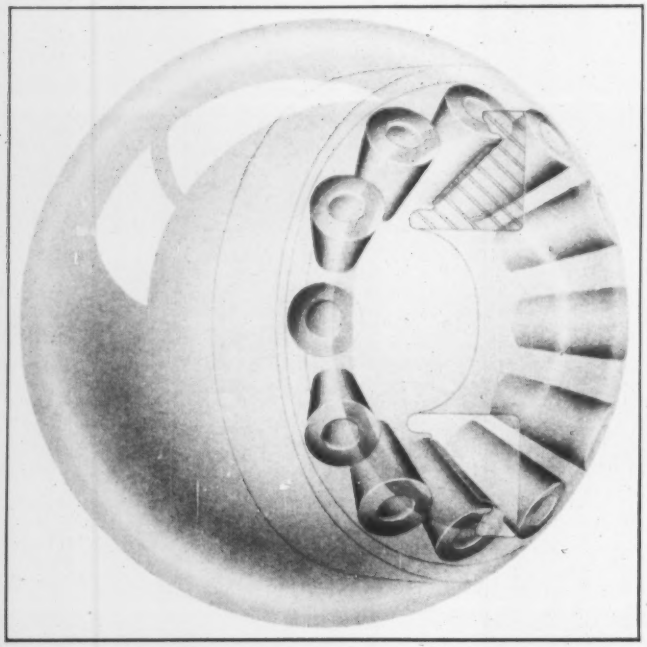
TANDEM units provide top hauling strength for dump and other extra-rugged operations.



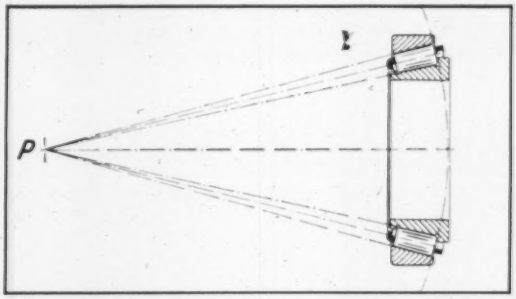
BEARING BRIEFINGS

One in a series of technical reports by Bower

SPHERICITY — ESSENTIAL TO MAXIMUM BEARING PERFORMANCE



When you require bearings, we suggest you consider the advantages of Bower bearings. Where product design calls for tapered or cylindrical roller bearings or journal roller assemblies, Bower can provide them in a full range of types and sizes. Bower engineers are always available, should you desire assistance or advice on bearing applications.



True rolling of tapered bearing elements depends upon maintaining a true spherical radius during manufacture.

For a tapered roller bearing to achieve maximum performance, i.e., maximum life and capacity under load, it must have true sphericity — a condition of bearing geometry which permits true rolling of the tapered rollers in the raceway.

True rolling in tapered bearing elements is the result of maintaining a critical geometric relationship between the raceways and the contact surfaces of each roller. True rolling is essential to maximum performance. Without it, premature bearing failure is certain.

As engineers know, a tapered roller will describe a true circle when rolled on a plane surface. *It will always roll in this one path precisely, without sliding or skewing.* But to put true rolling to work in a bearing which can carry both heavy thrust and radial loads, it is essential that the rollers *and* the raceway have a true spherical radius, or sphericity. The drawing illustrates this condition.

If each roller in the bearing were to be extended in length, while retaining its taper, it would form a cone, terminating at point "P". All cones generated from all rollers would meet at point "P", which is also the center of the hypothetical sphere shown. The surface of the sphere would *touch all points on each roller's head!*

In effect, then, each roller's taper determines the radius of a hypothetical sphere whose surface, in turn, determines the correct contour for each roller head. Only when these conditions are satisfied in design, and when they are rigidly held during manufacture, will true rolling take place. In the manufacture of each Bower tapered roller bearing, sphericity is held within extremely narrow limits by means of special Bower-designed precision grinders. The consistent accuracy possible with these machines is one major reason why Bower roller bearings provide maximum performance under all speeds and loads up to the bearing's maximum rating.

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Obituaries

J. Howells, Architect, Dies; Designed Tribune Tower

John Howells, 91, architect and exponent of the Gothic spirit in skyscraper design, is dead. He collaborated in designing the Daily News Building in New York City and the Tribune Tower in Chicago. The latter design won an award in a competition among 200 architects.

An authority on early American architecture, Mr. Howells wrote many books on the subject and worked to preserve and restore many examples of colonial architecture.

After World War I Mr. Howells went to Belgium at the request of President Hoover to take over the construction of new buildings for the University of Brussels. He also served on the National Fine Arts Commission under Presidents Hoover and Roosevelt.

An 1891 graduate of Harvard University, Mr. Howells studied for several years at the Ecole des Beaux Arts in Paris.

Harvey Lesure, 73, consulting mechanical engineer with Gibbs & Hill, New York City. He did extensive work in start-up engineering for steam-electric generating stations throughout the world. He had also worked for the Consolidated Edison Co. as mechanical superintendent of Hell Gate Station, New York City.

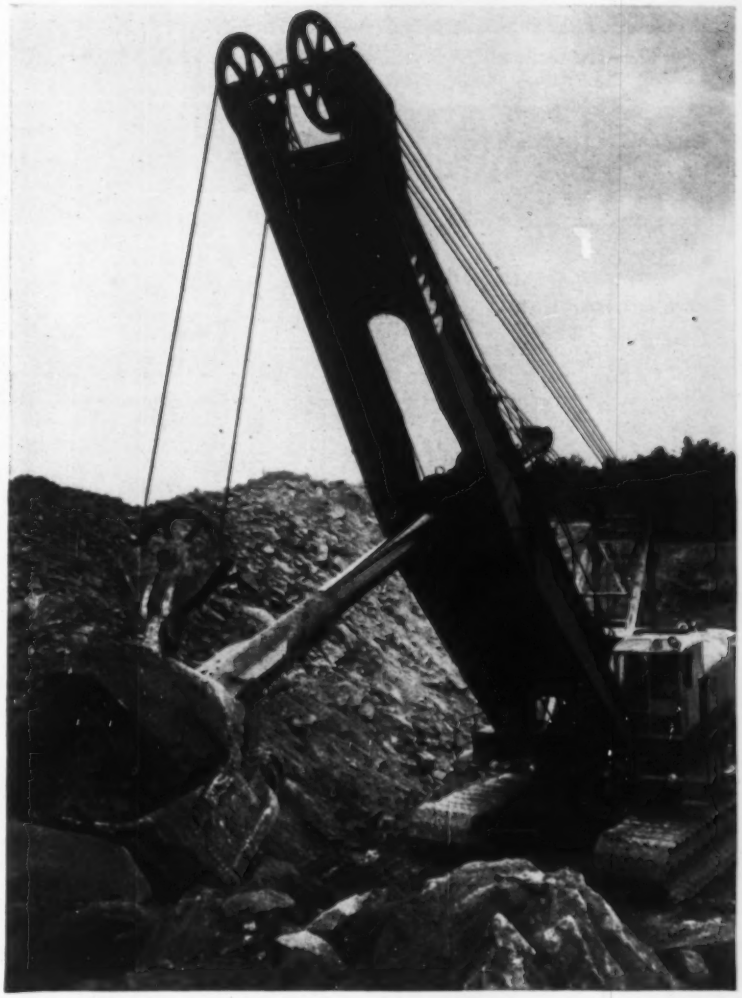
Robert A. Bearwalde, 74, retired Cleveland building contractor.

F. S. Mallette, 53, consultant on air pollution control and editor of SMOG NEWS, a publication of the Committee on Air Pollution Controls. A native of New York City, Mr. Mallette studied at the Universities of Michigan, Chicago and Pittsburgh and later at the Mellon Institute of Industrial Research.

Daniel Mason, 57, engineer and representative for the Robert Shaw Fulton Co., Albany. He supervised construction of the first hydro-electric plant built by the Niagara Mohawk Power Corp.

John C. Hayes, 71, long time legal counselor for the Associated General Contractors of America. He was also counselor for the national construction magazine, the Constructor, and had been one of its contributing editors. In 1923 he and his two brothers opened the law firm of Hayes and Hayes, Washington.

(*Obituaries continued p. 70*)



What happens when the bucket's moving rock like this?

The National Torque Converter gives the answer!

The bucket always wins the tug-of-war—because the shovel is equipped with a National Torque Converter. The Converter cuts crowding speed w-a-y down—and boosts crowding power way up!

The National Torque Converter not only automatically "tailors" the power delivered to the need, thus multiplying the useful workability of the machine . . . it also absorbs the damaging shocks that cause operator fatigue and equipment failure. If you build or operate any heavy equipment powered at from 100 to 1000 hp, National Torque Converters may improve its performance. Write:

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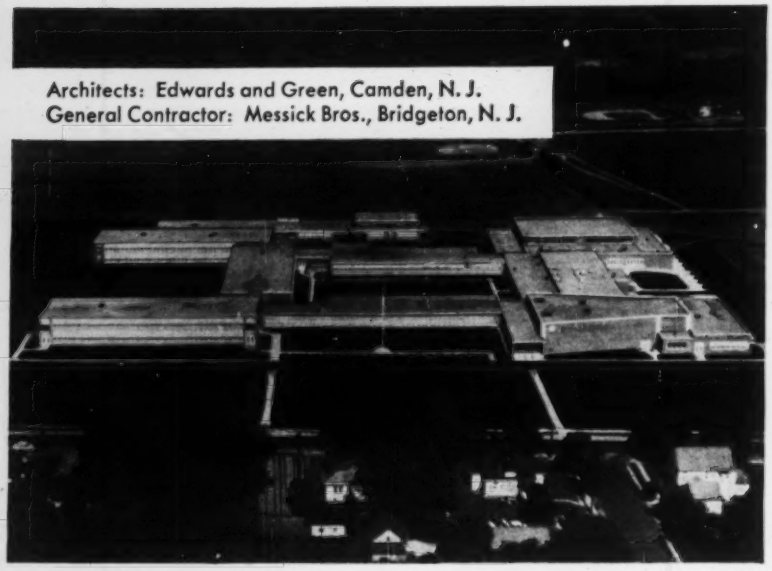
TWO GATEWAY CENTER, PITTSBURGH, PA.



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General Contractor: Messick Bros., Bridgeton, N. J.

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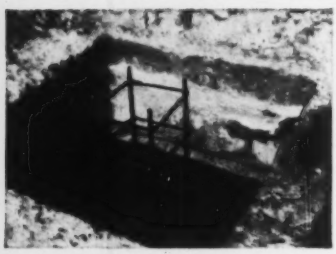
was selected over alternate foundation solutions for New Jersey high school.

Bridgeton High School, Bridgeton, N. J., was built on sand compacted by Vibroflotation. 668 compactions were made to a depth of 12 feet below the bottom of footings to obtain a minimum 70% relative density.

Vibroflotation provided a substantial savings over alternate foundation solutions. Additional savings were realized through elimination of all formwork for footings.



Vibroflotation stabilizes granular soil so effectively that excavations retain neat, vertical walls even after placement of reinforcing steel and pouring of concrete.

Other schools recently built on sand compacted by Vibroflotation include: In Florida, nine Catholic schools in Pensacola, Orlando, Largo, St. Petersburg, Fort Pierce, and (four) in Miami; four educational buildings at the new University of South Florida, Tampa; Sarasota High School, Sarasota, Florida; Marlow Heights Junior High School, Prince George's County, Maryland; Colonie Junior High School, Colonie, New York.

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. . . Obituaries

Lester G. Foxwell, 60, Milwaukee consulting engineer. He had been an engineer for Johns-Manville Corp., New York City, and before that, a sales engineer for the LeRoi division of the Westinghouse Air Brake Co., Milwaukee.

Frank J. Trelease, 72, consulting engineer with Ford, Bacon & Davis, Inc., New York City. In 1948 he received a presidential certificate of merit for his work as head of the Maryland Research Laboratory of the National Research Defense Committee.

Daniel Jensen, 67, New York City architect specializing in hospital design. He was associated with Crow, Lewis & Wick, New York City. A graduate of Pratt Institute, Brooklyn, he spent three years in the Panama Canal Zone doing hospital architectural work. Mr. Jensen was also involved in designing Doctors Hospital & French Hospital, New York City, and Jewish Hospital, Brooklyn, N. Y.

Forrest L. Jenkins, 77, co-founder and executive vice president of Western Foundation Corp., New York City. He was also president of Giles Drilling Corp., New York City. Mr. Jenkins worked in the foundation and heavy construction field throughout the east and midwest since 1902. During his early career he was chief engineer for the MacArthur Concrete Pile Co.

Gebbard Jaeger, 85, founder and honorary board chairman of the Jaeger Machine Co., Columbus.

Hubert H. Crane, 66, Ft. Worth architect. Mr. Crane was a fellow in the American Institute of Architects and a frequent writer for the national journal.

Samuel S. Watkins, 74, consulting electrical engineer. Until his retirement in 1957, Mr. Watkins was with Gibbs & Hill, New York City, where he designed the electric power facilities of the Pennsylvania Railroad and other lines. He also designed the electrical distribution systems at the Quonset Point, R. I., Naval air station and the Rome, N. Y., air depot.

John W. Cunningham, 72, head of John W. Cunningham & Associates, consulting engineers of Portland, Ore. He designed many of the municipal water and sewage systems in the Pacific northwest. A graduate of the University of Wisconsin, Mr. Cunningham formed the firm of Barr and Cunningham with J. O. Barr in 1914.

SETTING 8 TONS, OR 800 TONS, AMERICAN AIR CONTROLS DO THE JOB SAFELY, SMOOTHLY WITH UNEQUALLED ACCURACY

HERE IS PROOF-POSITIVE OF THE SUPERIORITY OF AMERICAN AIR CONTROLS.

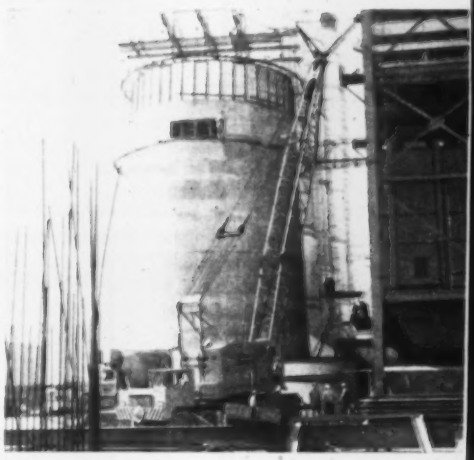
In the main illustration you see the world's largest floating lifting device, an 800-ton capacity air-controlled American Derrick, owned by the J. Ray McDermott Co., Harvey, La. Setting the world's lift record in its 1956 builder's trials, this mammoth derrick has since provided safer lifting for scores of difficult jobs such as the one above. Here American air controls were relied on to set in place a massive offshore drilling platform in the Gulf of Mexico. Air controls were employed because their reliability has been proven time after time on the most delicate and costly heavy-duty jobs.

For handling smaller loads . . . your heaviest loads . . . you can count on American air controls for accuracy, with safety.

As demonstrated in the smaller illustration, workmen have complete confidence in the reliability of an American 500 Series Truck Crane, *with Air Controls*, throughout a skillful powerhouse erection job.

Whatever your job demands are, there's no reason why you can't use American Air Controlled equipment for easier, safer lifting.

American Hoist has pioneered air control design and construction for almost three-quarters of a century. Today, American equipment is better than ever . . . better than any. Contact your American Distributor now and let him show you how.



DERRICKS-HOISTS to 800 tons
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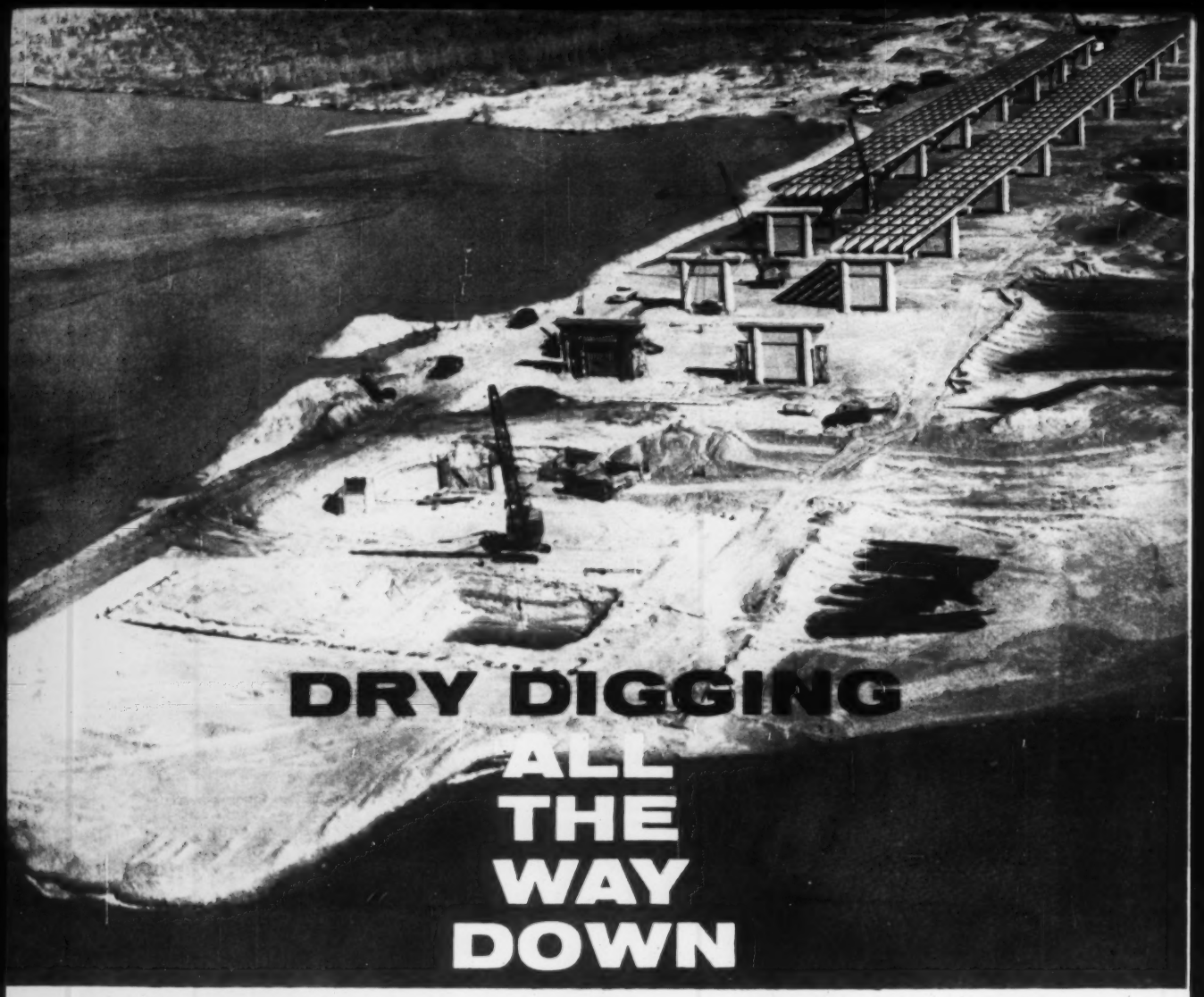
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain



DRY DIGGING ALL THE WAY DOWN

STANG SINGLE STAGE WELLPOINT SYSTEM SPEEDS EXCAVATION THROUGH COMPLETE GROUND WATER CONTROL

Excavating for these riverbed bridge piers required efficient, accurate water control. The method chosen to accomplish this had to be sufficiently effective to dewater 24' to subgrade, yet flexible enough to move on to the next landing as the piers were placed. At the request of the contractor, engineers of the John W. Stang Corporation analyzed the problem and promptly recommended wellpointing as the best solution. Why a wellpoint system? Because it afforded pinpoint accuracy in the area being dewatered, it did not inhibit the excavating with shoring, braces or equipment in the hole, and it was economical and reliable to operate.

The successful handling of difficult water problems is Stang's sole business. Stang engineers are water-handling specialists, well-qualified to prescribe the most efficient and economical solution to job site water problems of all types. The next time you have a water problem, consult the Stang office nearest you. You'll save time and money when you do.

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Books

Basics for Computers

DIGITAL COMPUTER PRIMER—By E. M. McCormick. 214 pages. McGraw-Hill Book Co., New York, Toronto, London. $7.50.

DIGITAL COMPUTING SYSTEMS—By Samuel B. Williams. 229 pages. McGraw-Hill Book Co., New York, Toronto, London. $7.75.

Engineers interested in learning the fundamentals of high-speed electronic computers will find both these books of value. The first book deals principally with the use of computers; the second mostly covers computer components.

In essence, a high-speed electronic computer consists of an input, a storage or memory unit, an arithmetic unit, controls and an output. When it is in good working order, it does only what it is told to do. It has its own language, so instructions have to be given to it in that language (coding) or a translator must be interposed. To get results from a computer, therefore, you must be able to give it detailed, accurate instructions in its language, a process called programming.

The primer describes and explains the essential elements of computers. It also discusses the basics of programming and coding, maintenance of accuracy and checking of results.

Thes second book concentrates on input and output devices, memory and arithmetic units, and electrical and electronic circuits. It also has some material on programming and application of computers to scientific, business and data handling problems.

Just Published . . .

THE WATER INVENTORY OF THE CUYAHOGA AND CHAGRIN RIVER BASINS—Division of Water, 1542 West First Ave., Columbus 12, Ohio. $6.00 (two volumes).

GROUND WATER HYDROLOGY—by David K. Todd. 336 pages. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $10.75.

STEAM POWER PLANTS: STARTING, TESTING, AND OPERATION—by Charles Donald Swift. 416 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $11.50.

INDUSTRIAL BUILDING DETAILS—by Duane F. Roycraft. Second edition. F. W. Dodge Corp., 119 West 40th St., New York 18, N. Y. $12.75.

WATER FACTS FOR THE NATION'S FUTURE—by Walter B. Langbein and William G. Hoyt. 288 pages. The Ronald Press Co., 15 East 26th St., New York 10, N. Y. $5.00.

ESTIMATOR'S PIPING MAN HOUR MANUAL—by John S. Page and Jim G. Nation. 146 pages. Gulf Publishing Co., P.O. Box 2608, Houston 1, Tex. $7.50.

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WHEN & WHERE — . . . ∨ to contact the people who may influence the purchase or actually place the order

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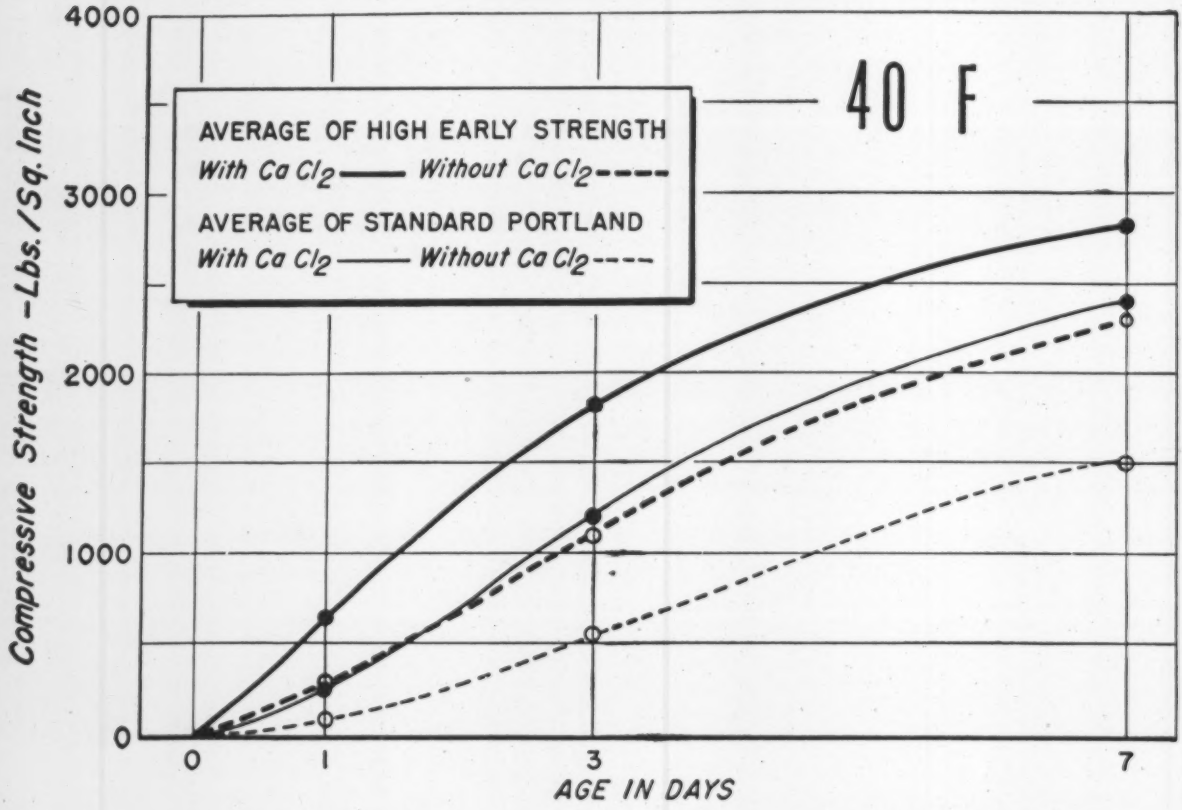
COLUMBIA CALCIUM CHLORIDE gives high early strength days faster



Low winter temperatures shouldn't put a chill on your concrete schedules. Pours can go smoothly, set time be shortened safely, finishing done without delay or overtime. How come? Columbia Calcium Chloride comes . . . right in the ready mix.

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Let our Columbia Calcium Chloride engineers help you save money on your concrete work this season. For their assistance, just write today to Calcium Chloride Department at our Pittsburgh address, or to any of our fourteen conveniently located District Sales Offices.

Columbia Calcium Chloride is available in both High Test Flake (94-97% $CaCl_2$ content) and Regular Flake (77-80% $CaCl_2$). One 80 lb. bag of High Test delivers the same results as one 100 lb. bag of Regular. Both add easily at suppliers' plants or right at the jobsite.

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IN CANADA: Standard Chemical Limited

Highway Prices—District of Columbia

Average Range of Contract Prices, 1959—1st Half

Bids Awards, 1959—1st half

Items	Unit	No. Jobs	Unit Prices Avg.	Range
Roads				
Exc, ordinary	cy	7	$2 28	$1 00- $3 50
hard surface	cy	5	4 21	3 10- 5 50
hand	cy	6	13 91	7 50- 16 00
Borrow, embankments	cy	4	2 90	1 00- 4 10
soils base	cy	5	3 70	3 25- 4 10
Soils base course, 8"	sy	3	0 76	0 56- 1 00
12"	sy	3	1 02	0 85- 1 15
Interceptor drains, 6"	lf	2	4 00	3 50- 4 50
8"	lf	2	4 50	4 00- 5 00
Trench exc, additional	cy	1	10 00	
Connecting pipe, 6"	lf	1	3 50	
8"	lf	1	4 00	
Borrow, trench backfill	cy	2	7 00	5 00- 9 00
Lumber left in place	Mbf	1	150 00	
Reinf port cmt conc pave 8"	cy	5	30 80	18 00- 50 00
	sy	5	8 35	6 90- 13 25
Wire fabric reinf, 50#	sy	5	0 69	0 50- 0 80
Expansion joint filler	lf	3	1 76	0 80- 2 50
Cement, standard, add	bbl	5	5 16	4 80- 5 50
Calc chlor accelerator	lb	7	0 045	0 03- 0 05
Reinf port cmt conc, 8" base	sy	3	6 40	6 20- 6 50
base	cy	7	33 21	18 00- 50 00
drwy & alley entr, 7"	sy	6	7 07	6 00- 7 80
Exp jt filler, alley & drwys	lf	2	0 80	0 70- 0 90
Port cmt conc sidewalk	sy	4	4 92	4 45- 5 40
repairs	sy	4	5 48	5 00- 5 85
Exp jt filler, sidewalks	lf	7	0 53	0 30- 0 75
Port cmt conc curb, A, 15"	lf	4	2 37	2 00- 3 00
variable W&D	cy	4	53 75	50 00- 60 00
curb & gut, A	lf	3	3 16	2 50- 3 50
gutter	sy	6	8 80	8 00- 9 80
cl A, bus stops	cy	2	46 25	32 00- 60 50
cl B, islands	cy	3	46 16	28 50- 65 00
Brick sidew, repair repl	sy	2	3 25	2 50- 4 00
Cut to neat line	lf	3	1 00	1 00- 1 00
Anchor bolts	ea	1	2 00	
Circ stn curb set, 8x12"	lf	2	3 00	2 50 3 50
reset 8x12"	lf	1	2 50	
Str cir stn curb reset, 8x8", 8x12", 6x20"	lf	3	2 66	2 00- 3 00
Stone or conc curb, adj	lf	1	3 00	
MH fr & basin cover, adj	ea	5	10 00	7 50- 12 50
Wat vlv fr casings, adj	ea	4	9 37	7 50- 10 00
PUC MH frame, adjust, under 6 sf, & 6-15 sf	ea	1	7 50	
over 15 sf	ea	1	15 00	
Sht asph pave, incl binder	sy	4	1 98	1 65- 2 18
Asph conc binder	t	1	15 00	
modified	t	3	19 13	15 00- 24 40
Sheet asphalt surface	t	5	19 88	17 00- 24 40
Asph conc base, cl A	t	4	13 62	9 00- 19 50
surf, cl C	t	7	14 63	9 00- 24 40
cl D	t	2	11 62	10 00- 13 25
Asph surf, heater method, repair	t	3	22 80	20 00- 24 40
Dampproofing	sy	2	1 00	1 00- 1 00
Membrane waterproofing	sy	2	2 50	0 50- 4 00
Port cmt conc, cl B, walls, steps, copings	cy	5	73 40	50 00-100 00
Topsoil, 4" deep	sy	2	0 70	0 50- 0 90
Handrail	lf	1	6 00	
Stone masonry walls	cy	3	88 33	60 00-105 00
Conc, cl BB, footings	cy	4	40 00	40 00- 40 00
MH fr & cover, sewer or water, furnish	ea	3	61 66	50 00- 75 00
Port cmt conc median walk	sy	1	6 00	
Reinf PCC circ curb	lf	2	3 37	3 00- 3 75
& gutter	lf	3	3 80	3 75- 3 90
Cmt conc circ curb alley, drwy corners	lf	3	3 58	3 00- 4 00
Reinf stl for steps	lb	3	0 16	0 15- 0 20
Sodding, incl topsoil	sy	4	1 11	1 00- 1 25
Bridges				
Exc, unclassified	cy	1	2 00	
structure	cy	2	15 50	6 00- 25 00
Backfill & fill	cy	2	6 00	2 00- 10 00
Dampproofing	sy	1	1 00	
Membrane waterproofing	sy	1	3 00	
Porous backfill	cy	1	7 50	
Conc, cl BB, subfoundation	cy	2	43 50	28 00- 59 00
footing	cy	1	33 00	
wall	cy	1	61 00	
Reinf steel	lb	2	0 135	0 13 0 14
Stone masonry facing	cf	1	7 50	
Tremie concrete	cy	1	74 25	
Aluminum railing	lf	1	13 00	
Stn masnry, cl A, type 1	cf	1	20 00	
Sewer items				
Exc, uncl	cy	4	$5 96	$4 00- $9 85
Brick masonry	cy	5	98 20	75 00-110 00
RCSP, 30"	lf	2	12 60	11 00- 14 20
24"	lf	5	12 46	8 00- 16 85
21"	lf	2	11 30	7 60- 15 00
18"	lf	2	8 50	7 00- 10 00
15"	lf	5	8 88	6 00- 11 50
Elongated basin, #2	ea	1	550 00	
#1	ea	3	500 00	500 00-500 00
Standard basin	ea	5	329 00	235 00-410 00
RCSP basin conn, 18"	lf	1	10 00	
15"	lf	4	10 87	9 00- 14 50
Subgrade gravel	t	4	7 83	7 00- 8 00
Bracing lumber	Mbf	4	108 75	100 00-135 00
Basins abandoned	ea	4	82 50	50 00-120 00

Water Supply Job Goes to Low Bid on Tunnel Section

The portals of the McCullough Tunnel, a 6,600-ft water diversion tunnel near Alma, Summit County, Colo., will be located at an elevation of over 11,000 ft. The Colorado Springs Utilities Department award at $438,280 went to John W. Brown Construction Co., Denver, on a low bid of $62.00 per ft for 6,240 lin ft of unsupported tunnel section including timbering at the portals. Other bids on this item ranged from $71 a lin ft by the second low bidder, to a high of $106 a lin ft.

Bids were taken with and without reinforcing steel. The award was on the latter.

The 6x8-ft horseshoe tunnel is a conduit for the municipal water supply.

The tunnel section will be steel lined for 100 ft, and an additional 100 ft will be steel and concrete lined.

Prevailing wages include: carpenter $3.00; tractor operator $3.00; crane & power shovel operator $3.15; miners, tunnel $2.525; common laborers in tunnel $2.275.

The bidding included:

1C John W. Brown Constr. Co., Denver	$438,280
2 Colorado Constructors, Denver	514,990
13 A.S. Horner Constr. Co., Denver	739,720

Bids: 9-16-59 Items	Unit	Quantity	Unit Prices 1C	2
Tunnel section, std unsupported, incl timber at portals	lf	6,240	$62 00	$71 00
stl lined, incl price of std unsupported section	lf	100	100 00	180 00
stl & conc lined, incl price of std unsupp sect	lf	100	200 00	260 00
Passing section, std unsupp, incl price of unsupported tunnel section replaced	lf	160	90 00	120 00
Timber sect at tunnel portal	lf	50	45 00	100 00
Pilot holes	lf	500	2 00	2 00
Cement for grouting holes	sack	200	10 00	5 00
Conc, excl of tunnel lining	cy	25	70 00	70 00
Reinf stl, furn & place	lb	1,500	0 25	0 20

Commence: 10-1-59.
Completion schedule: 275 cal days. Liquidated damages: $100 day.

Delaware Road Prices

The unit price tabulation for the Delaware road improvements on p. 78 in the Oct. 1 issue, carried unit prices for the first two bids opened, not the low bidders.

For the second and low bidders, the correct unit prices are given in the following tabulation:

1C George & Lynch, Inc., Wilmington, Del	$448,639
2 Edgell Constr. Co., Inc., Dover, Del	471,119
7 Wilson Contr. Co., Inc., New Castle, Del.	633,419
EE Raymond Johnsen, State Hwy. Dept., Dover	510,000

Bids: 8-10-59 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$4,000	$10,000
Excavation	cy	23,400	0 46	0 60
Masonry, remov existing	cy	76	20 00	9 00
Excavation, structures	cy	250	2 00	3 00
Borrow	cy	200	1 00	2 00
pit stripping	cy	100	0 01	0 01
select	cy	13,200	0 75	1 00
Port cmt conc base course	cy	5,700	17 00	19 00
with crack contr	cy	1,200	17 00	19 00
Binder crse, asph conc pavement, hot mix, hot laid	t	10,500	8 25	8 00
Wearing course, asph conc pave alt. A, hot mix, hot laid	t	5,900	8 25	8 80
alt. B, bank run, hot mix	t	5,900	8 00	7 50
Asphalt, R.C. 1	gal	10,800	0 15	0 15
R.C. 3	gal	10,800	0 15	0 15
Crushed stone or gravel	t	430	6 00	5 80
slag	t	430	6 00	6 00
Portland cmt conc pavement	cy	340	19 00	24 00
patching	sy	1,000	10 00	10 00
masonry	cy	120	80 00	75 00
Waterproofing, superficial	sy	175	2 00	2 00
Bar reinforcement	lb	9,000	0 12	0 13
Struct steel anchor bolts	lb	220	2 50	1 00
Reinf conc pipe, 12"	lf	2,400	3 00	2 80
15"	lf	2,550	4 00	3 40
18"	lf	1,600	4 50	4 10
21"	lf	1,820	5 50	4 70
24"	lf	434	6 50	5 80
48"	lf	96	23 00	18 00
extr str, 15"	lf	236	5 00	3 60
36"	lf	98	15 00	12 00
jacked in	lf	20	50 00	30 00
Asph ctd cor met pipe, 24"	lf	20	8 00	7 35
18x11"	lf	550	5 00	4 70
22x13"	lf	420	5 50	5 35
29x18"	lf	800	8 00	7 50
36x22"	lf	70	10 00	11 00
Vit clay pipe, 4"	lf	100	2 00	2 00
6"	lf	100	2 00	2 00
8"	lf	100	2 00	1 50
Underdrain, 6" CMP	lf	750	2 50	2 50
Timber sht piles, untreated	Mfbm	6	200 00	250 00
Cmt conc gutter around P.W.-B.D. catch basins	sy	380	5 00	5 00
Port cmt conc curb, type 1	lf	4,700	1 85	1 90
type 2	lf	2,580	1 85	1 75
sidewalk, 4"	sf	18,000	0 40	0 44
6"	sf	4,800	0 50	0 54
Catch basin, type A	ea	26	150 00	100 00
type P.W.-B.D.-1	ea	4	150 00	135 00
type P.W.-B.D.-2	ea	20	175 00	165 00
type P.W.-B.D.-4	ea	27	200 00	190 00
Manhole, standard	ea	20	250 00	185 00
Minor instals, adjust & repair	ea	4	20 00	25 00
Castings	lb	20,200	$0 12	$0 12
Gratings, P.W.-B.D.	sf	717 5	5 50	5 10
Topsoil, 4"	sy	4,150	0 50	0 15
Seeding	ac	12	200 00	200 00
Mulching	sy	52,000	0 05	0 05
Sodding	sy	500	0 65	0 65
Sand	t	420	3 00	3 00
Cement, extra	bag	100	1 50	1 50
Lateral ditching	lf	1,400	1 00	0 60
Calc chlor, dust control	t	10	55 00	60 00
Riprap, grouted	sy	90	10 00	10 50
Asphalt tack coat, R.C.-1	gal	8,600	0 15	0 15
M.C.-0	gal	240	0 15	0 30
Junction box, special	ea	1	125 00	250 00
Window well	ea	3	84 00	50 00
Drain structs, sta 240+60, remove	ls	job	200 00	200 00
Structures, remov existing	ls	job	200 00	220 00
Maintenance of traffic	ls	job	1,000	1,000
Borrow, select, trm	cy	400	1 00	2 00
Cold laid bit conc, trm	t	200	8 00	10 00
Quarry waste, trm	t	200	5 00	6 00
Field office	ls	job	1,000	1,000

trm Temporary road materials.
Commence: 6-29-59. Complete: 12-15-59.
Liquidated damages: $80 cal day.

new IDEAS

there's an Inland construction steel for everyone

These days, a lot of bright architects and engineers who aren't afraid of new ideas, are turning the construction business upside-down. Everywhere one looks, new techniques, new materials, daring new concepts, are changing the face of America. Yet, as every practical contractor can tell you, all of these new-direction ideas are firmly based upon the proven strength and dependability of steel.

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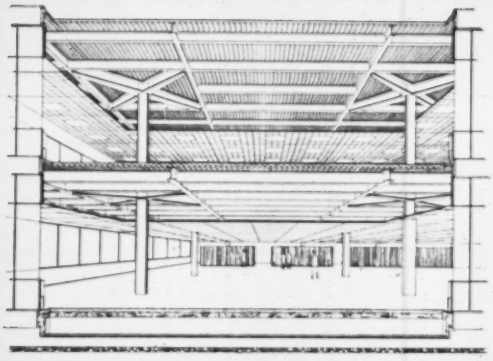
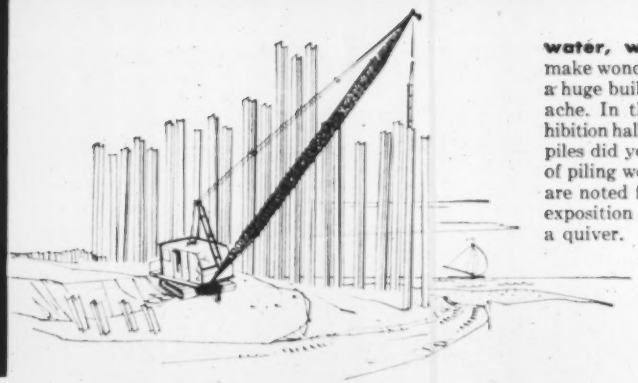
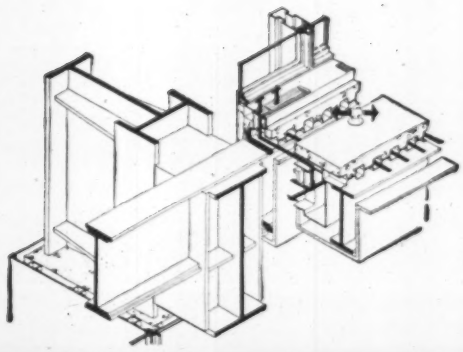


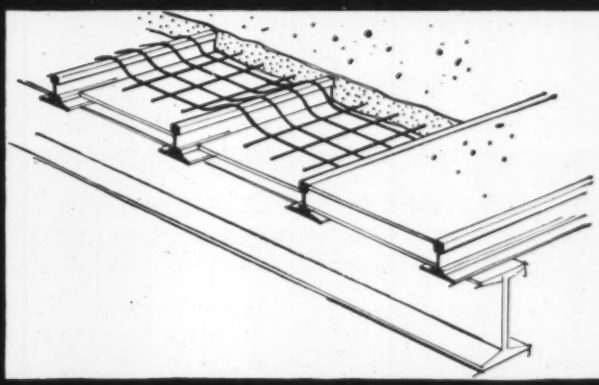
umbrella cross heads speed construction—add interesting design note—For this handsome and highly utilitarian structure, the key to the structural steel system was unique cross heads made up of Inland Wide Flange Beams. Welded into an umbrella-like design they were prefabricated into single units. On the job each unit was fastened to a supporting column using standard connections with a minimum of field welding. 36 such units were used per floor with 35 feet between supporting columns, thus providing 35-foot clear span square bays throughout. Interesting also, is the resultant 17½ foot cantilevered overhang around the entire perimeter.



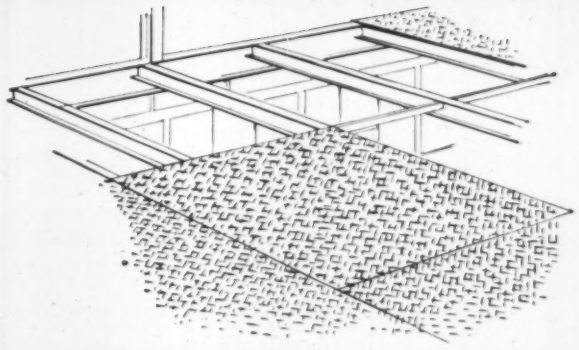
water, water, everywhere! Sand shores make wonderful bathing beaches, but anchoring a huge building in such material can be a headache. In the construction of an enormous exhibition hall right on the lakefront Inland bearing piles did yeoman service. More than 6,000 tons of piling were used and though the Great Lakes are noted for the fury of their storms, the new exposition center will ride them out without a quiver.



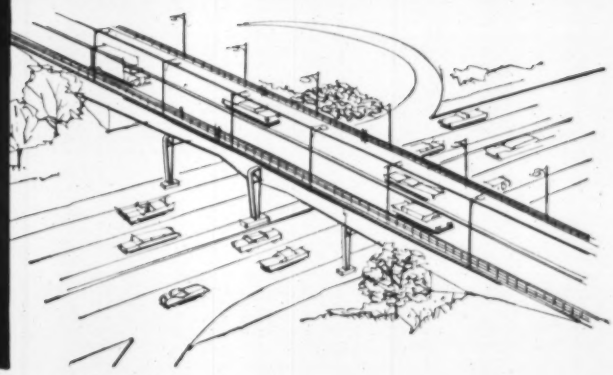
unique solution to a building frame problem—This special "torque" joint was the answer to a number of problems in the construction of a building frame where wind load was an important factor. The joint distributed the load between columns and spandrels as well as distributing both live and dead load between columns and girders. Fabricated from Inland Steel Plate at the same time as the vertical supporting columns, the "torque boxes" made field connection with girders a quite simple job. Note also the cellular floor construction—an Inland solution to the problem of handling phone, heating, cooling, utility ducts of all kinds.



weight-saver for short-span roofs... Inland sub-purlins—Inland sub-purlins are especially designed to provide a lighter, more efficient member for shorter-span roof construction. In addition, they make a real contribution to the modern good-looks so evident in today's construction. Installation is fast, easy, and entirely without waste, for Inland sub-purlins are cut to the length required for the specific roofing job. Mill painted, ready for clipping or welding to the purlin member, they're ideal for gypsum, aggregate or grout fill—all types of pre-cast or poured roofs.



new way to take advantage of prefabricated floor plate—The inherent strength of versatile Inland 4-Way Safety Plate permits its use as an integral part of the supporting structure. Used everywhere as a long-lasting material for floors, walls and stairs in industrial plants and institutional buildings, 4-Way Safety Plate is here used as part of the supportive framework. ¼ inch floorplate was used and a remarkable design span of 48 inches between centers was achieved. Additional advantages on this job were ease of cleaning and maintenance, fire safety, and slip-proof protection for future tenants and their employees.



how to stretch a girder for 500 feet—Inland Plate and Structural steel is doing its bit to make the nation's network of superhighways a reality. To span an overpass under construction in the very heart of a huge metropolitan city, Inland prefabricated sections for the enormous girders. Fifty such sections ranging from 80 feet to 120 feet in length and tapered 4½ feet to 7 feet in height were built-up from Inland plate, transported to the site where they were welded into giant girders stretching for more than 500 feet to support multiple-lane roadways.

bridges *now span gap between* superior construction and lower costs

...with RB&W High Strength Bolts

LARGEST new bridges now have members connected with high strength bolts... for economy and speed of installation and for greater strength under dynamic as well as static loads.

Railroad bridges also, long plagued by rivets loosening from severe vibration, are being built to avoid future maintenance problems and to save money. It started when the AAR arranged with several railroads to replace rivets with high strength bolts in troublesome locations. With subsequent inspection, (1) the bolts showed no cracked paint, rust or other signs of slippage of members; (2) bolts retained their original clamping force. In one recent repair project, only 10 manhours were required to bolt trestle section, as compared to 30 manhours for riveting.

And for overpass bridges, too, it's faster erection at lower cost per ton of installed steel when connected with RB&W High Strength Bolts. Typical 4-lane highway bridge was erected in 40% of the time and with ½ the manpower which riveting would have required. "Bolts a necessity if schedules are to be met...almost always an economic advantage also," said the construction coordinator.

Need more be said? If you're putting up a bridge or building, top it with more quality and economy ... use RB&W High Strength Bolts. Bulletin HS-1 tells more. Write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

R B & W

115th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver, Fargo. **Distributors** from coast to coast.

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl, C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.,* truckload del.,* per block		CONCRETE Ready Mixed 1:2:4 del. per cy
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.18a‡	$3.78a‡	$3.48a‡	$3.10a‡	$3.10a‡	$1.85‡a	$2.18a	$2.33a	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.32a	3.91a	3.46a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.06‡a	2.00‡a	.18a	.18a	13.50ww
Birmingham	4.23c	3.30c‡	...	2.53ne	2.53ne	2.13ne	2.75a	2.75a	1.65d	1.75d	.18	.18	14.00g
Boston	5.80ip	4.52ap	4.80imp	3.00qae	3.00qae	3.00qae	1.75qae	1.85qae	...	...	.23o	.275oa	15.00g
Chicago	4.13ag	3.87ag	3.90/3.95g	3.78‡e	3.78‡e	4.13‡e	3.95‡e	3.95‡e	2.25‡s	2.25‡s	.26‡s	.26‡e	13.50e
Cincinnati	4.68c	4.18c	4.18c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.20e	.25ae	14.00qr
Cleveland	1.30‡	...	3.89‡ae	2.25ae	2.10ae	1.75ae	2.70‡y	2.70‡y	2.20‡fR	2.20‡fR	....	.23f	16.50w
Dallas	3.63a	3.25a	3.53a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	...	...	....	.27	12.50a
Denver	4.79a	4.29a	4.79	1.95‡	2.15‡	1.42‡b	...	3.00‡x	...	...	.35	.27ae	11.90
Detroit	4.25a	3.74aqq	3.72a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.47aqas	2.47aqas	.22u	.25‡au	15.00eaa
Kansas City	4.23a	3.83a	4.10a	...	...	1.85‡a	2.00‡a	2.00‡a	....	....	.23a	.26c	14.00
Los Angeles‡‡	5.12ch	4.65ch	5.60c	2.56‡af	2.76‡af	2.41‡af	2.41‡af	2.46‡af	....	....	.19f	.303	12.40kkz
Minneapolis	4.41a	4.00a	4.00a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	...	...	.20g	...	14.05f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡at	2.15‡at	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	.20†	.28rt	10.80ak†
New Orleans	4.06b	3.65b	3.85b	2.61b	2.61b	2.16b†	...	...	1.65d	1.75d	.29r	.29	14.00e
New York	4.58aR	4.18aR	3.65aR	...	3.20bk	3.30bkw	2.85bkb	3.10bkb	...	...	.285nwe	.33bwe	17.60ay
Philadelphia	4.39‡ae	3.99‡ae	3.51‡r	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	...	.225	13.90r
Pittsburgh	5.65bjk	4.62bj	5.00bj1	2.85‡aqe	2.85‡aqe	3.08‡aqe	2.00‡aqe	2.00‡aqe	2.10w	2.10w	.28r	.28r	15.80e
St. Louis‡‡	4.34a	3.94a	4.04a	3.45‡ae	3.30‡ae	2.40/3.40‡ae	1.75‡a	1.75‡a	...	...	.255‡a	.315‡ae	13.65/14.10g
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00rc
Seattle	4.22‡a	3.60ag	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	...	...	.324a	.45ca	13.90f
Toronto	5.00a	4.00Rf	5.00a	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.275ca	13.75g

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ‡‡ Add 2% intrastate sales tax. R Revised. † Plus 8% Mun & Prov tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 5% disc. 15 days. *bb Less 2% 25th of month

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 18. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 16. *u Less 5% disc. 10 days. *v Less 12% disc. 15th. *w Eff. 1/1/57

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more. *c 10-100 cy. *d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp. *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 8% mun. & prov. tax. *l 1:2½:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢, 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable. *Prices guaranteed through December 31, 1959*

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45	Buffington, Ind	$3.40	Steelton, Minn	$3.45	Muskegon, Mich	$3.45	Toledo, O	$3.45
Clinchfield, Ga	3.45	Independence, Kan	3.25	Leeds, Ala	3.30	Saginaw, Mich	3.45	Milwaukee, Wis	3.50
Kingsport, Tenn	3.45	Hannibal, Mo	3.35	Duluth, Minn	3.45	Wyandotte, Mich.	3.45	Green Bay, Wis	3.50
West Des Moines, Iowa	3.50	Northampton, Pa	3.50	Hudson, N. Y.	3.50	Buffalo, N. Y	3.55	Ironton, O	3.45
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.35	Oswego, N. Y	3.60	Montreal City	2.56
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.45	Cleveland, O	3.50	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.45	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.60PS	$45.00PS	$0.2740PS	$0.235S	$0.1375wS	$0.245wS	$0.1325S	$0.1325S	$0.245
Baltimore	e	e	e	21.00t	...	09t	0.18t	.09wE	.18wE	.095t	.10t	0.19t
Birmingham	...	68.00k	...	25.12	25.69O	1069	0.1093O	1162w	1188Oc	.1006O	.1069	0.1093O
Boston	...	...	...	22.00apS	45.00apS	22.00anS	46.00anS	105awP	22awP	.14aOR	.15OR	...
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡af	22.00b	32.00b	20.40bx	30.40bx	106wH	.18wH	.08b	...	...
Cincinnati	...	...	...	26.00SU	...	26.00ff	...	1165wSU	...	.109	.1265	...
Cleveland	...	89.50‡d	6.30	26.00tA	...	26.00txA	...	1115wAP	...	...	.1180A	.21A
Dallas	e	40.80p	e	28.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	...	62.00a	...	...	...	...	...	...	...	...	...	...
Detroit	...	116.00	...	30.90R	...	31.00nR	...	.1342wIR	...	.1000	...	.28
Kansas City	e	e	e	18.00ei	...	18.00es	...	.0825wJ	...	.079e	0.135e	...
Los Angeles‡	e	e	e	21.50dmz	...	21.50dtz	...	23.00dKz	...	22.00dwa	23.90‡Xv	26.30‡Xv
Minneapolis	...	...	3.73A	25.00	...	26.00r	...	115we	...	0.105	.1375bb	...
Montreal	e	e	e	30.50n	43.60n	167n	211n	17.80nwE	22.20nwE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	...	20.00ev	...	095ew	...	.085wB	.095eRL	.1905wB
New York	...	...	3.70f	23.99wtO	45.94wtO	23.99wtO	45.94wtO	10.61uP	20.01uP	...	10.68u	20.11u
Philadelphia	...	...	...	18.21U	...	18.21U	...	0.085‡10FU	...	0.085‡10U	...	...
Pittsburgh	60.00k	95.00m	6.35n	31.20ue	...	31.20ue	...	1403‡S	...	142S	1403t	...
St. Louis‡‡	...	...	...	19.74f	21.19	1825f	1825	.0890f	.0915fe	0.165f	1825O	30R
San Francisco	...	70.00	...	22.50qdd	41.00qdd	22.50qkndd	41.00qkndd	22.50qNdd	46.50qNdd	23.25qWdd	23.50qXdd	20.25qXdd
Seattle	...	...	...	25.00z	40.00A	25.50wzc	...	26.50KE	...	24.25hzY	23.50hzX	45.10hzX
Toronto	...	135.50‡f	4.50f	41.10	60.66ze	0.2025	0.2773ze	0.222w	0.2704wze	0.233	0.218Zze	273Zze

‡ Delivered. ‡‡ Add 4% sales tax. ‡‡ Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3½ x 8. *c 2½ x 8½ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb. tr. *g Less $1 Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3⅝ x 8½. *j 2½", 6 lb. tr. *k Used. *l Redshale. *m Pine: oak $8.57. *n Truck del. *o Less $1 M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 8% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0-5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1-5, RC 1-5, $0.0918. *N MC 3. *O Truck-load. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *dd Less disc of $1 ton. *ee 45 Imp. gal. drums *ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Oct. 22; Next, Nov. 19.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 29; Next, Nov. 26.
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 29; Next, Dec. 3.
- Iron & Steel Products, Pipe: Last, Oct. 15; Next, Nov. 12.

Glen Canyon Dam will be built for the U.S. Bureau of Reclamation. *Prime contractor:* Merritt-Chapman & Scott Corp.

They bolted the face of this 700-ft cliff

This sheer canyon wall will soon form one side of Glen Canyon Dam which will arch 1500 feet across the Colorado River in Arizona. The dam when completed will store water to generate electric power for a five-state area. Here you see construction workers, hundreds of feet above the river, drilling holes in the rock face of the cliff with Bethlehem hollow drill steel.

After the holes are drilled, Bethlehem slotted rock bolts are installed. When the bolts are driven, a steel wedge, previously inserted in the slotted portion of each bolt, spreads the bolt ends to provide firm anchorage. The bolts clamp the layers of rock together, stabilizing them. Square anchor plates were used for additional support.

In addition to the slotted bolt, Bethlehem also makes a headed bolt for rock control. It has a ¾-in. diameter, and is used with a leaf-type expansion shell.

If you have a rock control problem, we'll gladly work with you in solving it. Just say the word, and we'll have a representative examine the site, and make recommendations. Our nearby sales office is at your service.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Conn., Southington—SCHOOL—BA 11/19—Town, Town Hall, North Center School, Southington, and Plantsville Elementary School, Plantsville. $800,000. Louis R. Fucito, 37 Hillside Ave., Waterbury, archt. Hill & Harrigan, 909 Whalley Ave., New Haven, engrs. CD 4/8 and 10/22.

Conn., Newtown—FACTORY—BA 11/23—Plastic Molding Corp., Glen Rd., Sandy Hook, 1 and 2 story, semi-fire proof, brick, steel factory, Peck's Lane. $900,000. Giffels & Rossetti, 1000 Marquette Bldg., Detroit, Mich., archts. CD 5/18.

▲ **Mass., Boston**—CIVIC AUDITORIUM—BA 12/16—City, City Hall, 6,000 seat civic auditorium, Prudential Center site, Boylston St. near Dalton St. $12,000,000. Hoyle, Doran & Berry, 248 Boylston St., archts. CD 4/9/57.

BUILDINGS—LB & CA

▲ **Owner**, c/o T. Dennie Boardman, 1 Court St., Boston, Mass., Separate Contracts, Approx. $1,100,000, first eight DeLux Co-Operative two-family APARTMENTS, BROOKLINE, MASS. Charles H. Cole, 55 Waltham St., Lexington, Mass., archt. CD 10/23.

H. J. Madore, Inc., Golf St., Southbridge, Mass., LB $902,850, HIGH SCHOOL and Cole TRADE SCHOOL addns., Dresser St. and Cole Ave., SOUTHBRIDGE, MASS. Town, Supt. Schools, 82 Marcy St., Southbridge, Mass. Bids Oct. 20. CD 10/5.

▲ **Gilbane Building Co.**, 90 Caverly St., Providence, R. I., CA $7,600,000, 18 story HOTEL, Chapel St. and COMMERCIAL BLDG., MULTIPLE STORE SHOPPING STRUCTURE and RESTAURANT, Church St. Redevelopment Area, awarded Oct. 21. CD 6/25/57; CA $2,400,000, 2 story, 240,000 sq. ft. DEPARTMENT STORE, Church St., Church St. Redevelopment Area, NEW HAVEN, CONN. Stevens-New Haven Development Corp., 745 Fifth Ave., New York, N. Y. Edward Malley Co., lessee, for department store. Awarded Oct. 21. CD 10/15.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., West Seneca**—INFIRMARY BUILDINGS, etc.—BA 12/16—Henry A. Cohen, dir. Bureau Contracts, Dpt. P. Wks., State Office Bldg., Albany, Spec. No. 15761-C, general contract, Spec. No. 15761-H, heating, Spec. No. 15761-S, sanitary, Spec. No. 15761-E, electric, Spec. 15761-R, refrigeration work, Spec. 15761, food service equipt. for Infirmary Bldgs. Nos. 10, 11, 14, 15, 22, 23, 26 and 27, Kitchen Bldgs. Nos. 13 and 24, Infirmary Administration Bldgs. Nos. 12 and 25 and connecting corridors, School for the Mentally Retarded and Children's Psychiatric Hospital. Plans deposit $50 for general, $40 each, heating and electric, $30 sanitary, $20 food service equip., $5 refrigeration. CD 1/18/56.

▲ **N. Y., Brooklyn**—SCHOOL—Bids Asked—St. Edmund's R. C. Parish, Avenue T and E. 19th St., commercial high school. $1,300,000. William J. Boegel, 12 E. 48th, New York, N. Y., archt. V. A. Falotico & Assocs., 26 Court, consult. engrs. Severud-Elstad-Krueger, 415 Lexington Ave., New York, N. Y., structural engrs.

▲ **N. Y., Flushing**—CHURCH—Bids Asked—St. Michael's R. C. Parish, 136-58 41 Ave., church. $1,000,000. John O'Malley, 774 Carol St., Brooklyn, N. Y., archt. Joseph P. Wohlpart Assocs., 155 E. 42nd St., New York, N. Y., mechanical engrs.

BUILDINGS—SLC

▲ **Md., Halethorpe**—BREWERY—Carling Brewing Co., 9400 Quincy Ave., Cleveland 6, O., soon lets contract, brewery. Extended date: $16,000,000. McGeorge-Hargett & Assocs., 7016 Euclid Ave., Cleveland 3, O., engrs. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

▲ **L. E. Myers Co.**, 53 W. Jackson St., Chicago, Ill., CA $3,088,575, 345 KV transmission line from Rochester to Syracuse Substations, Monroe and Onondaga Counties, Spec. PA-9-3, Contr. AL-3, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Oct. 15. CD 10/19, under LB.

BUILDINGS—LB & CA

▲ **Diesel Constr. Co.**, 24 W. 58th St., New York 19, N. Y., CA Est. $2,500,000, 20 story APARTMENT, 35-43 Sutton Pl. at East 59th St., NEW YORK, N. Y. Owner, c/o Sylvan Bien, archt., 342 Madison Ave., New York 17, N. Y. CD 6/15, under William Buxbaum as owner.

▲ **Orlian Bldg. Corp.**, 36 W. 60th St., New York 19, N. Y., Owner builds, $4,000,000, 20 story APARTMENT, 531-43 East 86th St., 1-15 Henderson Pl. and 538-42 East 87th St., NEW YORK, N. Y. Sylvan Bien, 342 Madison Ave., New York 17, N. Y., archt. CD 4/14.

R & J Constr. Co., Rye, N. Y., LB $915,000, SCHOOL, Tinton Ave., EATONTOWN, N. J. Bd. Educ. Monmouth Regional High School Dist., New Shrewsbury, N. J. Bids Oct. 15. CD 10/1.

▲ **Piracci Constr. Co.**, 2552 Woodbrook Ave., daltimore 17, Md., CA $2,700,000, 1, 2 & 3 story brick, block, concrete, steel Lombard JUNIOR HIGH SCHOOL, Lombard, Bethel, Pratt and Caroline Sts., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Tyler, Ketcham & Myers, 513 Park Ave., Baltimore 1, Md., archts. Awarded Oct. 21. CD 10/16, under LB.

▲ **George Hyman Constr. Co.**, 1010 Vermont Ave. N.W., Wash., D. C., CA $1,572,000, HOSPITAL WING, BETHESDA, MD. The Suburban Hospital Assoc., Inc., 8600 Old Georgetown Rd., Bethesda, Md. Bids Sept. 15. CD 9/18, under LB.

▲ **All-State Homes Oxon Hill**, 30 Verbena Ave., Floral Park, N. Y., Owner Builds, $1,600,000, 100 HOUSES, Oxon Hill District near Washington, D. C., OXON HILL (P. O. Rural Delivery, ANACOSTIA, D. C.), MD. CD 4/22.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Ala., Huntsville**—BA 11/10—City, City Hall, outfall sewer lines, $2,000,000. J. W. Goodwin Eng. Co., 2111 7 Ave. S., Birmingham, engr.; sanitary sewer lines in West Huntsville Area, $750,000, G. W. Jones & Sons, 307 Franklin St., engrs. CD 5/4.

BUILDINGS—BA

N. C., New Bern—SCHOOL—BA 11/24—Bd. Educ., Craven Co., Courthouse, 85,000 sq. ft. West Havelock Elementary School, Havelock, $900,000. Plans deposit $50. Raymond Fuson, Elks Temple Bldg., archt. CD 10/22.

BUILDINGS—SLC

▲ **Fla., Miami**—HOSPITAL—Cedars of Lebanon Hospital, 1451 N. Bayshore Dr., soon lets contract, hospital, NW 14 and 15 St., West of N. W. 12 Ave. Smith & Korach, 1630 Lenox Ave., Miami Beach, archts. N. J. Dignum & Assocs., 260 Palermo Ave. Coral Gables, structural, mechanical and electrical engrs. CD 10/14.

▲ **Va., South Boston**—PLANT—United States Plywood Corp., soon lets contract 80,000 ft. Novoply Plywood Plant and offices. $2,000,000.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Dpt. Hys., Room 400, Central Hy. Office Bldg., 1221 E. Broad St., Richmond,
Troitino & Brown, Inc., Crayton Rd., Asheville, N. C., CA $1,129,612, 8 bridges incl. interchange U. S. 11; twin structures over N&W RR twin interchange bridges, Rte. 658, twin structures over Rte. 808, twin bridges over Rte. 76, bridge for spur to Bristol, twin bridges over Old Dominion Rd. bridge over Beaver Creek, Rte. 81, State Proj. 81-095-014, B2, B4, B5, B6, B8, B9, B30, Fed. Proj. I-IG-81-1 (13) 5, Washington Co. Bids Oct. 14, awarded Oct. 21. CD 10/19, under LB.

▲ **VIRGINIA**—Dpt. Hys., Room 400, Central Hy. Office Bldg., 1221 E. Broad St., Richmond,
Va.—**Turner Bros.**, RFD 3, Salem, Va., CA $648,028; 24 ft. b. conc., grading, drainage for connections and bridge fills for each end 5.05 mi. Rte. 220-A, Fed. Proj. F-03-3 (7) Franklin Co.;
Va.—**Charles W. Williams & Assocs., Inc.**, 2210 Maryland Ave., Baltimore, Md., CA $2,375,692, grading, drainage 4 lane by completed service roads and connections Rte. 81, Fed. Proj. I-81-1 (13) 5, Washington Co. Bids Oct. 14, awarded Oct. 21. CD 10/19, under LB.

BUILDINGS—LB & CA

▲ **Eugene Simpson & Bros.**, 300 Montgomery St., Alexandria, Va., LB $1,006,000, (10 bidders), Poe Intermediate SCHOOL, Monterey Dr. and Cindy Lane (former site Edsall Rd. and Back Lick Rd.), Annandale, FAIRFAX, VA. Fairfax Co. Bd. Educ., Fairfax, Va. Strang & Childers, 110 Maple St., Annandale, Va., archts. Bids Oct. 22. CD 5/11.

▲ **A. C. Samford, Inc.**, Box 1229, Albany, Ga., CA $1,395,281, 92-bed Anniston Memorial HOSPITAL addn., ANNISTON, ALA. Anniston Memorial Hospital Bd. Trustees, Anniston, Ala. Bids Oct. 8, awarded Oct. 22, CD 10/14, under LB.

▲ **Cresthill Constr. Co.**, 3510 4 St. N., St. Petersburg, Own Forces, $1,000,000, HOUSING DEVELOPMENT, 100 houses, 75 Ave. 115 St., LARGO, FLA. Jack Lewis, P. O. Box 237, Largo, Fla.

▲† **Farnsworth & Chambers Co., Inc.**, P. O. Box 74, Houston, Tex., CA $1,111,732, "Bird Cage" facility incl. WAREHOUSE, ADMINISTRATIVE BLDG. etc., for storing atomic weapons, CLARKSVILLE, TENN. Atomic Energy Comn., Clarksville Naval Base, Clarksville, Tenn. Bids Sept. 3. CD 9/10, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
O.—**National Engineering & Contracting Co. and Great Lakes Constr. Co.**, 1968 W. 3rd St., Cleveland, O. CA $4,597,693, Type T-71 and structures 4.013 mi. SR 1 (and S. R. 306), Section 4.02 (New) ACI 90-1-(22)23, S-46(7) I-1103(20), Proj. 507, Lake Co.;
O.—**S. E. Johnson Co.**, P. O. Box 29, Maumee, O., CA $2,693,964, Type T-35, T-71 and structures 6.758 mi. USR 25-0.38 ACI-ACIC 75-6(6) 166(New) I-1067(3) Old, (Village of Cygnet) Proj. 509, Wood Co. Bids Oct. 13.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, Bids opened 10/23,
Ill.—**J. D. Barter, Harrisburg, Ill., & E. T. Simonds Co.**, 1020 W. Main St., Carbondale, Ill., LB $701,114, (7 bidders), grading 1.4 mi. FAI-57 north of Dongola, Union Co.;
Ill.—**Robert A. Black**, 13912 S. Halsted, Chicago, Ill., LB $2,614,750, (9 bidders), 4 lane paving 3.37 mi. Hy. US 45 Interstate FAI 70 northeast of Effingham, Effingham Co.;
Ill.—**Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., LB $1,188,164, (7 bidders), outfall sewer, SBI 18, Chicago, Cicero and Stickney, Cook Co.;
Ill.—**R. B. Potashnick & Regenbardt Constr. Co.**, Cape Girardeau, Mo., LB $1,063,763, (6 bidders), paving 4.16 mi. FAI 57 between Ill. 146 and Dongola, Union Co. CD 10/9;
Ill.—**J. P. Wetherby Co.**, 1016 W. Superior, Ottawa, Ill. LB $995,015, (10 bidders), paving ramps, grade separation 2.36 mi. FAI 80 near Ottawa, LaSalle Co. CD 10/9.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,
Standard Paving Co., 308 W. Washington, Chicago, Ill. CA $2,849,401, paving, ramps Northwest Expressway, Chicago. Bids Sept. 29, awarded Oct. 21. CD 10/2.

BUILDINGS—LB & CA

Sever-Williams Co., Inc., P. O. Box 392, Washington C. H., O., CA $975,632, RESEARCH CENTER addns., main bldg., pilot plant remodeling, CHILLICOTHE, O. Mead Corp., 118 W. 1st St., Dayton, O. CD 9/23.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED	
LOW BIDDERS	
CONTRACTS AWARDED	
New England	**Middle West**
Middle Atlantic	**Mississippi to Rockies**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Wyo., Cheyenne**—OPERATIONAL BASES—BA 11/24—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., WS-107A1 operational bases, 549-1 thru 549-9, nine missile launching sites, Francis E. Warren Air Force Base, ENG-25-066-60-13, $18,000,000-$20,000,000. CD 10/16.

▲† **S. D., Rapid City**—TECHNICAL FACILITIES, etc.—BA 12/3—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., WS-107A-2 technical facilities, Base T-2 incl. one launch complex at each of 3 sites, consisting of (A) three launch stations each with missile silo, equipment terminal, propellant terminal and propellant sys. (B) one guidance facility with two antenna terminals, (C) one underground control center, (D) one underground powerhouse with electrical generating, heating, and air-conditioning equipment, (E) interconnecting tunnels for utilities and personnel, (F) utilities roads and grading, ENG-25-066-60-1, furnishing standardized equipment for WS-107A-2 technical facilities, incl. furnishing under supply contracts standardized equipment to be installed under ENG-25-066-60-1 and under three addnl. invitations separate contracts will be awarded for furnishing the following (A) propellant loading sys. equipment, (B) air compressors, (C) air-conditioning and refrigerating equipment, (D) pumps, (E) electrical generating equipment, (F) motor control centers and unit substations, (G) alarm sys. equipment, ENG-25-066-60-35, Ellsworth Air Force Base. Extended date. CD 9/29.

▲† **Oklahoma**—BA About 12/17—U. S. Eng., Box 61, Tulsa, spillway, power intake and powerhouse substructure, left abutment access road repair, Eufaula dam, Canadian River, IFB CIVENG-34-066-60-31. CD 9/28.

BUILDINGS—BA

▲ **Mo., Sikeston**—HOUSING—BA 11/19—City Housing Auth., 106 brick veneer, concrete dwelling units, Proj. Mo-8-1. Over $1,000,000. Plans deposit $25. Buchmueller, Whitworth & Assocs., P. O. Box 532, archts. CD 1/14.

BUILDINGS—SLC

▲ **Tex., Houston**—PLANT, etc.—Armour & Co., 318 Cadiz St., Dallas, soon lets contract, 1 story, 73,000 sq. ft., rein.-con. refrigerated processing plant and distr. center, incl. covered stock pens and primary sewage treatment plant. $2,500,000. Wyatt C. Hedrick, 1200 T&P Bldg., Fort Worth, archt. CD 8/26.

HEAVY CONSTRUCTION—LB & CA

▲† **Al Johnson Constr. Co.**, Foshay Tower, Minneapolis, Minn., and **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb. (joint venture) CA $9,587,002 Upper Lock, St. Anthony Falls Project, Mississippi River, Minneapolis, Inv. No. CIVENG-21-018-60-1, MINNESOTA. U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul 1, Minn. Bids Oct. 7. CD 10/12, under LB.

▲ **TEXAS**—State Hy. Comn., Austin. Bids opened 10/20.

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., LB $1,894,078, flex. base, b. conc. 3.860 mi. Hy. St. 124 Spur 5 and St. 73, Proj. F 748(3), F 1052(49), Chambers and Jefferson Counties;

Tex.—**Hugh McMillan, Inc.**, Box 1612, El Paso, Tex., LB $729,129, flex. base, hot mix b. conc. pavement 6.162 mi. Hy. US 54, Proj. U 784(6), El Paso Co. CD 9/28.

BUILDINGS—LB & CA

▲ **Ramey Constr. Co.**, Box 6, Amarillo, Tex., LB $1,365,522, general contract two 2 story 36,000 sq. ft. STUDENT DORMITORIES, CANYON, TEX., West Texas State College, Canyon, Tex. Bids Oct. 15. CD 10/6.

▲ **Orchard Hills Shopping Center**, c/o Dick Austin & R. E. Ransdell, 5402 Emerson St., Dallas, Tex., Owner Builds, $1,100,000, SHOPPING CENTER, GARLAND, TEX. CD 10/8.

W. B. Uhlhorn Constr. Co., P. O. Box 2028, Harlingen, Tex., LB $963,800, (21 bidders), 100 dwelling units, Tex. 11-3, LAREDO, TEX. Laredo Housing Auth., Laredo, Tex. Bids Oct. 22. CD 9/16.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 11/20—Los Angeles County Flood Control Dist., 2250 Alcazar St., Storm Drain Bond Issue Proj. No. 74, Redondo Beach Blvd. and Figueroa St. storm drains city and county of Los Angeles. $1,163,000. CD 11/7/52.

HEAVY CONSTRUCTION—LB & CA

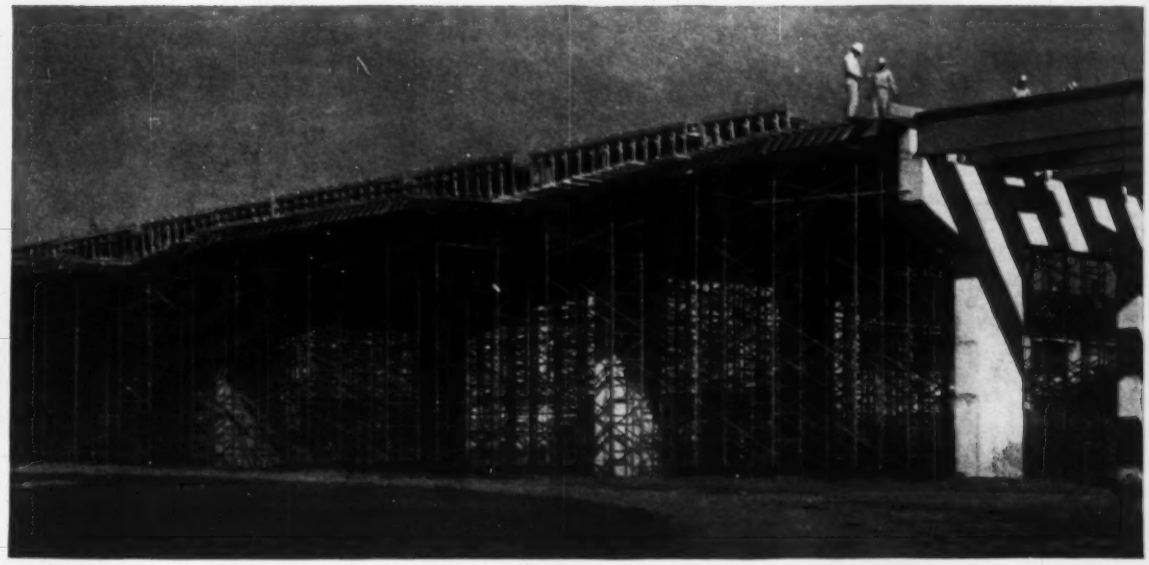
▲ **UTAH**—State Rd. Comn., State Capitol, Salt Lake City. Bids opened 10/20.

Utah—W. W. Clyde, Springville, Utah, LB $1,058,776, bit. surf. 3.357 mi. Morgan-Stoddard Proj. I-80N-2 (1) 65, Morgan Co. CD 9/26/57.

Utah—Tiago-Schmidt Co., 3399 S. 2nd W., Salt Lake City, Utah, LB $1,566,141, concrete road, two concrete, steel structures, one prestressed structure 2.058 mi. Int. Hy. 15 between Beck's Overpass and Cudahy Lane, Proj. I-15-7 (11) 309.

▲ **Kemper Constr. Co. & MacDonald & Kruse**, 3701 Overland Ave., Los Angeles, Calif., CA $3,371,063, Proj. No. 59, Unit 1, Central Business Storm Drain.

(Continued on page 84)



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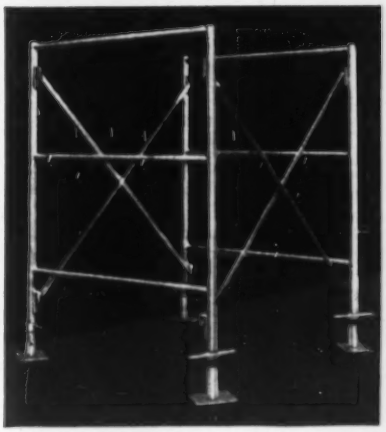

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(Continued from page 82)

Portion Line A, Line 1 and portion Line H, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 9, awarded Oct. 20. CD 10/16, under LB.

BUILDINGS—LB & CA

▲ **W. S. Hardie & Son**, 858 Pearl St., Eugene, Ore. CA $1,205,076 (6 bidders), SENIOR HIGH SCHOOL, SPRINGFIELD, ORE. Lane County School Dist. No. 19, Springfield, Ore. Bids Oct. 19, awarded Oct. 19. CD 10/5.

▲ **B. & R. Constr. Co.**, 110 Market St., San Francisco, Calif., LB $1,218,000, (5 bidders), wood, steel frame, concrete McChesney JUNIOR HIGH SCHOOL addn., OAKLAND, CALIF. Oakland Bd. Educ., Admin. Bldg., 1025 Second Ave., Oakland, Calif. Chester H. Treichel, 690 Cleveland St., Oakland, Calif., archt. C. Jefferson Sly., 580 Market St., San Francisco, Calif., engr. Bids Oct. 20. CD 6/8/56.

Maino Constr. Co., 2238 S. Broad St., San Luis Obispo, Calif., CA $961,424, general constr. 2 story, 55,000 sq. ft. air-conditioning, rein.-con. LITTLE THEATER-MUSIC BLDG., California State Polytechnic State College, W.O. 4160GC-16, SAN LUIS OBISPO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Sept. 30, awarded Oct. 19. CD 10/6, under LB.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Hamilton**—BA 12/2—City, City Hall, Sewage Treatment Plant Contr. No. 4, incl. deep well pumping station, screenings and grit removal bldg., chlorination bldg., associated bldg., heating, ventilating, Woodward Ave. $2,250,000. Plans deposit $150. Proctor & Redfern, 75 Eglinton Ave. E., Toronto, engrs. CD 2/7/56.

BUILDINGS—BA

Man., Fort Garry—SCHOOL—BA 11/13—Fort Garry School Div. No. 5, school, $985,000. Plans deposit $100. Smith, Carter, Searle & Assocs., 65 Dewdney Ave., Winnipeg, archts. CD 8/27.

BUILDINGS—SLC

▲ **Sask., Saskatoon**—MEDICAL ARTS—Saskatoon Medical Arts Co., c/o Webster, Forrester, Scott, archts., 209-213 CPR Bldg., soon lets contract medical arts bldg. $1,250,000. CD 10/1.

HEAVY CONSTRUCTION—LB & CA

▲ **H. J. McFarland Constr. Co., Ltd.**, Picton, Ont. CA $1,067,168, Riverside Drive Development, incl. storm sewers, grading, roads and parking area, concrete curbs and sidewalks, (Scenic Drive), OTTAWA, ONT. Dpt. P. Wks, Hunter Bldg., Ottawa, Ont. Bids Sept. 23, awarded Oct. 19. CD 9/30, under LB.

BUILDINGS—LB & CA

▲ **Anglin Norcross (Ontario) Ltd.**, 224 Davenport Rd., Toronto, Ont., CA Over $7,500,000, HOME FOR AGED, incl. STAFF QUARTERS, two 5 story RESIDENCES, 3 story, bsmnt., HOSPITAL, HEATING PLANT, LAUNDRY and CHAPEL BLDG., TORONTO, ONT. House of Providence (Sisters of St. Joseph), 65 Power St., Toronto, Ont. Bids Oct. 14, awarded Oct. 16. CD 9/15.

▲ **Federal Constr. Ltd.**, 1440 Towers St., Montreal, Que., Owner Builds, $1,200,000, 9 story, penthouse, 93 x 131 ft., concrete, rein.-con., brick, stone APARTMENT BLOCK, MONTREAL, QUE. Charles Grenier, 3600 Barclay Ave., Montreal, Que., archt. Eskenazi, Loebenbert, Slone & Bernstein, 6819 Decarie Blvd., Montreal, Que., engrs. CD 1/27.

▲ **Anglin-Norcross, Quebec Ltd.**, 892 Sherbrooke St. W., Montreal, Que., LB $2,978,000, (7 bidders), ADMINISTRATION BLDG., Fielding Ave. and Cote St. Luc Rd., MONTREAL, QUE. Protestant School Bd. of Greater Montreal, 3460 McTavish St., Montreal, Que. Henry Jasen, 1410 Guy St., Montreal, Que., engr. CD 5/11.

LATIN AMERICA

BUILDINGS—BA

▲ **Argentina, San Miguel**—HOUSING—BA 11/27—Instituto Nacional de Prevision Social, Solis 693, 10 Buenos Aires, 462 low cost housing units. $1,500,000.

FOREIGN

BUILDINGS—BA

▲ **Spain** — HOUSING — Bids Asked — Housing Ministry, Madrid, tourist-housing development, Mediterranean Coast. $10,000,000.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Fla., Boynton Beach**—City, City Hall, water treatment plant and lines $1,000,000. Russell & Axon, Municipal airport, Daytona Beach, consult. engrs.

▲ **Ill., Chicago**—Dpt. Purchases, City Hall,
48 in. water main Cicero Ave., 55th to 65th Sts., $495,000.
60 in. water main Cicero Ave., 65th to 83rd Sts., $1,190,000.
54 in. water main Halsted St., Vernon Park Pl. to Roosevelt Rd., $234,000.
48 in. water main Lavergne Ave., Northwest Expressway to Bryn Mawr Ave., $520,000.
36 in. water main 18th St., Dearborn St. to Indiana Ave., $135,000. Jas. W. Jardine, c/o owner, staff engr. on foregoing projects.
water tunnel connections and shaft adjustments, Chicago-Wilson tunnel, $2,000,000, all foregoing. Bid in 1960. Geo. S. Salter, c/o owner, ch. design engr.
36 in. water main Lotus Ave., Flourney St. to Kinzie St., $370,000. Jas. W. Jardine, c/o owner, staff engr.

▲ **New Jersey**—State of New Jersey-North Jersey Dist. Water Supply Comn., Wanaque, reservoir, transmission and filter sys., preliminarily 40 mi. pipe line from Round Valley to Elizabeth, Round Valley, Clinton, Flemington area, Hunterdon Co. $45,000,000. Lee T. Purcell, 36 DeGrasse St., Paterson, and Chas. H. Capen, 12 Lake End Rd., Green Pond, consult. engrs., for preliminary plans. CD 11/7/58.

▲ **N. J., Trenton**—City, City Hall, water filtration plant addn., $2,200,000; 1 m.g. elevated steel water tank, Hamilton Twp., Mercerville, $250,000; elevated steel water storage tank, Lawrence Twp., $250,000. Bids soon. Bowe Albertson Assocs., 75 West St., New York, N. Y., engrs. CD 3/6.

▲ **Utah, Salt Lake City**—Salt Lake County Water Conservancy Dist., 3383 S. 3rd East, voted bonds Oct. 6, deepwells, water lines and treatment plant. $5,000,000. Templeton & Linke, 500 Dooly Bldg., consult. engrs. CD 9/11.

▲ **Wash., Bellevue**—Water Dist. No. 99, voted $4,000,000 revenue bonds Oct. 13, water sys. in Highland-Overlake Park area, Hammond, Collier & Isaac, 4010 Stone Way, Seattle, Zone 3, consult. engrs. CD 10/7.

SEWERS, WASTE DISPOSAL

▲ **Ala., Alexander**—City, City Hall, 2 sewage disposal plants, trunk lines. $1,500,000. Robert & Co., 96 Poplar St. N. W., Atlanta, consult. engrs. CD 3/4/57.

▲ **Fla., Ormond Beach**—City, City Hall, sanitary sewers, incl. lift stations, lines, treatment plant $3,000,000. Briley, Wild & Assocs., 10 N. Wild Olive Ave., Daytona Beach, consult. engrs. CD 10/5.

▲ **Fla., Riviera Beach**—City, City Hall, sanitary sewer imprvs. $2,000,000. Briley, Wild & Assocs., 10 N. Wild Olive Ave., Daytona Beach, consult. engrs.

▲ **N. C., Leaksville**—Towns of Leaksville and Spray, Town Halls, sewage treatment plant, $1,000,000. William C. Olsen & Assocs., 5 Exchange Pl., Raleigh, consult. engrs.

▲ **Utah, Farmington**—South Davis Metropolitan Sewer Dist., voted $3,800,000 bonds Oct. 10, sewer purpose, incl. collection sys. and treatment plant. $1,500,000. Nielsen, Reeves & Maxwell, 275 E. 4425 S., Ogden, consult. engrs. CD 9/17.

BRIDGES

▲ **Ill., Chicago**—Dpt. Purchases, City Hall,
bascule bridge and viaduct over Chicago River, 18th St. from Canal to Clark Sts., $6,200,000, Bids 1960.
overpass 7th St. Kedzie Ave. and Southwest Hy., $1,500,000, Bids 1961.
overpass 87th St. over Columbus Ave. and Pulaski Rd., $1,000,000, Bids 1961.
overpass, Ashland Ave. over Blue Island Ave. and Cermak Ave., $1,500,000, Bids 1961.
overpass Ashland Ave. over Pershing Rd., $1,500,000, Bids 1960.
overpass Cicero Ave. over Archer Ave., $1,500,000, Bids 1961.
fixed bridge Diversey Ave. over North Br., Chicago River, $2,200,000, Bids 1961.
fixed bridge over Calumet River, Indiana Ave., $2,600,000, Bids 1960.
overpass Pulaski Rd. at Archer Ave., $2,000,000, Bids 1961.
railroad grade separation Pulaski Rd. over I.C. R.R. (3300 S.), $1,000,000.
railroad grade separation State St. under N.Y.C. R.R., $3,500,000, Bids 1962.
railroad grade separation Western Ave. at C.B. & Q. R.R. and 26th St., $1,500,000, Bids 1961.
railroad grade separation Western Ave. and Logan Blvd. under C. & N.W. R.R., $2,500,000, Bids 1961.
overpass Western Ave. over Elston and Diversey Aves., $1,500,000, Bids 1961. Dick Van Gorp., 320 N. Clark St., staff engrs. CD 6/10/57.

STREETS AND ROADS

▲ **NEBRASKA**—State Dpt. Rds., State House, Lincoln. **Douglas Co.**—Interchanges for Int. Rte. 1 where it connects with 72nd and 42nd Sts. and deep fills east of 72nd St., Omaha. $4,000,000.

▲ **OHIO**—State Hy. Dpt., State Dpt. Bldg., Columbus. **Clermont and Hamilton Counties**—four lane limited access highway US 52 (Kellogg Ave.) from Cincinnati to Neville, total est. $25,000,000; first section from Cincinnati to New Richmond ($10,000,000). Harry Balke Engrs., 2330 Victory Parkway, Cincinnati, consult. engrs. on 1st section.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg.
Luzerne Co.—4 mi. U.S. Rte. 309 between Luzerne and Dallas Boros. $1,520,000. R. W. Lowry, 227 Pine St., Harrisburg, consult. engrs.
Mifflin Co.—Northward Exten. Lewistown By-Pass 6 mi. Hy. U.S. Rte. 322, Lewistown, $1,800,000. Grof & Myers, Inc., 1824 N. 4th St., Harrisburg, consult. engr. W. R. Froehlic, c/o owner, act. ch. engr. CD 12/21/52.

EARTHWORK, WATERWAYS

▲ **Alabama**—Alabama Power Co., Alabama Power Bldg., Birmingham, 8 mi. canal, linking Lake Jordan and Coosa River; generating plant at head of canal. This would supersede dam at Coosa River Bridge, Elmore County. Applied to FPC for permit. $55,000,000. CD 11/25/53.

▲ † **California**—Eastern Contra Costa Soil Conservation Dist., Bryon, Calif., Contra Costa Soil Conservation Dist., Walnut Creek, Calif., Contra Costa County Flood Control & Water Conservation Dist., Concord, Calif., watershed protection, Marsh-Kellogg, 116,420 acres, Contra Costa and Alameda Counties, for Soil Conservation Service. $5,942,200.

▲ **Calif., San Rafael**—Marin Municipal Water Dist., 874 4th St., 115 ft. high earth-rockfill Nicasio Dam, concrete side channel spillway, 5 mi. roadway, bridge, 8 mi. water line near Novato, $2,000,000. Bids Feb. 1960. Wm. R. Seeger, genl. mgr. & ch. engr., 874-4th St., San Rafael, owners staff engr.

▲ † **Mississippi**—Adams Co. Soil Conservation Dist., Natchez, Miss., Second Creek Watershed Drainage Dist., Natchez, Miss., watershed protection Second Creek for Soil Conservation Service. $1,755,482.

▲ † **Oklahoma**—Pontotoc Co., SCD, Roff, Okla., Coal Co., SCD, Coalgate, Johnston Co., SCD, Ravia, Upper Clear Boggy Conservancy Dist., Coalgate, watershed protection, Upper Clear Boggy Creek, 162,240 acres for Soil Conservation Service. $4,566,054.

▲ **Oregon**—Consumers Power, Inc., Corvallis, 65 ft. dam and 10 mi. tunnel, hydroelectric power plant, North Fork Santiam River. $25,000,000.

▲ † **Texas**—McLennan County Soil Conservation Dist., Waco, Tex., Navarro-Hill Soil Conservation Dist., Streetman, Tex., Limestone-Falls Soil Conservation Dist., Groesbeck, Tex., McLennan and Hill Counties Tehuacana Creek Water Control & Imprvt. Dist. No. 1, Waco, Tex., watershed protection Tehuacana Creek, 196,480 acres, McLennan, Hill and Limestone Counties, for Soil Conservation Service. $6,572,418.

▲ **Tex., Uvalde**—Nueces River & Reclamation Bd., 7 dams for water conservation, Nueces Watershed, $1,500,000. Freese, Nichols & Andres, 407 Danciger Bldg., Fort Worth, consult. engrs.

▲ † **Virginia**—Southside Soil Conservation Dist., Red House, Va., Bd. Supervs., Charlotte Co., Charlotte, Courthouse, Va., Town of Keysville and Drakes Branch, Va., watershed protection Roanoke Creek, 141,900 acres, Charlotte Co., for Soil Conservation Service. $2,306,335.

▲ **Washington**—Douglas County Public Utilities Dist., East Wenatchee, hydro-electric dam, Columbia River near Wells. $116,000,000. May apply for license in 1960. Bechtel Corp., 220 Bush St., San Francisco, Calif., consult. engrs. CD 3/28/58.

AIRPORTS

▲ **Calif., Torrance** — AIRPORT IMPRVS. — City, 3031 Torrance Blvd., City Hall, master imprvs., Torrance Municipal Airport $1,000,000.

▲ † **Colo., Denver**—TELEPHONE EXCHANGE—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, Neb., telephone exchange, duct facilities at Titan Missile Assembly Bldg., Re-entry vehicle facility, missile storage, liquid oxygen plant, utilities, Lowry Air Force Base, $3,200,000.

▲ **Ill., Chicago**—AIRPORT IMPRVS.—Dpt. purchases, City Hall, plans by Naess & Murphy, 80 E. Jackson Blvd., Zone 4,
cargo warehouses, $1,180,000.
paving roads and parking lot in cargo area, $256,000.
airplane parking apron, cargo area, $1,220,000.
fire station service areas, $389,000.
terminal B and Concourse B alterations, $1,792,000.
parking lot addn., alterations, terminal area, $1,898,000.
outer circular taxiways and connecting taxiways, $1,729,000.
taxiway to hangar area, $1,163,000., all foregoing at O'Hare International Airport, Park Ridge. Bids 1960. CD 12/3/57.

▲ † **S. D., Rapid City**—MISSILE LAUNCHING COMPLEX, etc.—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., missile launching complex, airfield runway, aircraft weapons calibration center, liquid oxygen plant, missile storage, re-entry vehicle facilities, and utilities, Ellsworth Air Force Base. $42,080,000, funds released. CD 3/23/59.

▲ **Tenn., Memphis**—TERMINAL—Memphis Airport Comn., City Hall, plans by Mann & Harrover, 30 North Cleveland St., terminal bldg. at municipal airport. $5,000,000. CD 11/8/57.

▲ † **Wash., Moses Lake**—MISSILE STORAGE, etc.—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, missile storage, launching complex roads and utilities, Larson Air Force Base. $42,300,000, funds released. Ralph Parsons, 617 W. 7 St., Los Angeles, Calif., consult. engr. CD 5/15.

▲ † **Wyo., Cheyenne**—SUPPORT FACILITIES, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., support facilities, liquid oxygen plant, missile launching station and utilities, Francis E. Warren Air Force Base. $29,750,000, funds released. CD 3/25.

FOREIGN

▲ **Spain, Cartagena**—PORT WORKS—City, Plaza de Municipio, port works, $1,500,000. Entrecanales y Tavora, Juan de Mena 6, Madrid, consult. engrs.

PUBLIC BUILDINGS

▲ **Alaska, Anchorage**—SCHOOL—Anchorage Independent School Dist., plans by Manley & Mayer, Loussac Sogn

(Continued on page 86)

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(Continued from page 84)

Bldg., Senior High School on western edge of Mountain View Dist. $3,000,000. CD 10/14.

▲ **Calif., Lancaster**—HOSPITAL—Antelope Valley Hospital plans by Walker, Kallonzer & Klingerman, 488 S. San Vicente Blvd., Los Angeles, hospital addn. $1,775,000. CD 10/1/58.

▲ **Conn., Manchester**—HOUSING—Manchester Housing Auth., Drive A, plans by Arnold Lawrence, 571 Porter St., 100 unit housing for old aged, Silver Lane, $1,000,000, Henri B. Van Zelm & Assocs., 1007 Farmington Ave., West Hartford, consult. engrs. Morton S. Fine, 19 Whitney St., Hartford, site engr. Scudieri & Mankey, 627 Main St., Hartford, assoc. archts. CD 4/28.

▲ **Conn., New Britain**—SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Henry Ludorf, 95 Elm St., Hartford, 1 and 2 story, brick E. C. Goodwin Technical School. $1,200,000. Fred S. Dubin, 178 S. Whitney St., Hartford, consult.-engr. Walter J. Douglas Assocs., 1009 Farmington Ave., West Hartford, structural engrs. CD 3/16.

▲ **Conn., Torrington**—SCHOOL—Town, Town Hall, plans by Nichols & Butterfield, 998 Farmington Ave., West Hartford, high school, Elise Besse Park. $3,500,000. Marchant & Minges, 1007 Farmington Ave., West Hartford, consult. engrs. CD 10/13.

▲ **Fla., Jacksonville**—SCHOOLS—Bd. Public Instruction, Duval County, Courthouse, $35,000,000, bond election Dec. 22, 28 schools and remodeling others.

▲ **Fla., Tavares**—JAIL, etc.—Bd. Comrs. Lake Co., county jail and court house renovations. $1,250,000.

▲ **Ill., Elgin**—HIGH SCHOOL—City, City Hall, voted bonds Oct. 17, high school. $2,980,000.

▲ **Ill., Oak Park**—LIBRARY—Village, Village Hall, defeated bonds Oct. 17, library, $1,395,000. CD 9/8.

▲ **Ill., Ottawa**—SCHOOL—City, City Hall, bond election Nov. 17, Ottawa High School addn. $1,800,000.

▲ **Ky., Bowling Green**—HOSPITAL—Bowling Green, Warren Co. Hospital plans by Otis & Grimes, 319 Tyler Bldg., Louisville, Zone 2, hospital addn. $1,500,000. Constr. spring 1960. CD 11/14/58.

▲ **Md., College Park**—STUDENT UNION, etc.—State, Dpt. P. Imprvts., 301 W. Preston St., Baltimore, Zone 1, plans by Walton & Madden, 3510 Rhode Island Ave., Mt. Ranier, brick, limestone, concrete, steel, block student union addn. $1,500,000. J. L. Faisdot & Assoc., 2455 Maryland Ave., Baltimore 18, Md., structural engrs. H. Walton Redmile & Assoc., 4924 St. Elmo Ave., Bethesda, Md., mechanical engrs. CD 5/5; plans by Walton & Madden, 3510 Rhode Island Ave., Mt. Ranier, brick, concrete, steel, block, limestone arts and science bldg., $450,000, University of Maryland. CD 7/11/58.

▲ **Mass., Leominster**—SCHOOL—City, Supt. Schools, plans by L. W. Briggs & Assoc., Inc., 90 Park Ave., Worcester, high school. Approx. $1,000,000. Constr. 1960.

▲ **Mich., East Lansing**—RESIDENCE HALL—State, State Bldg. Dpt., Lewis Case Bldg., Lansing, plans by Ralph Calder & Assocs., 1212 Kales Bldg., Detroit, 7 story two-wing residence hall for graduate students, Michigan State University. $2,500,000.

▲ **Minn., Brainerd**—HOSPITAL—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, completing administration bldg. $460,600, constr. 4 patient bldgs. $2,609,400, Brainerd State School and Hospital. CD 8/3.

▲ **Minn., Mankato**—INDUSTRIAL ARTS, etc.—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Patch & Erickson, 2815 Wayzata Blvd., Minneapolis, and Wick & Stanchfield, 455 Mid-West Service Bldg., industrial arts and classroom bldgs., $765,000; plans by Graffunder-Nagle & Assocs., Sexton Bldg., Minneapolis, physical education facilities, $1,802,000; plans heating plant and utilities sys. bldg. $968,200, Mankato State College. R. W. Evans & Assocs., Plymouth Bldg., Minneapolis, consult. engrs. latter project. CD 7/23.

▲ **Minn., Moorhead**—SCIENCE and INDUSTRIAL ARTS—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Foss & Co., Moorhead, science and industrial arts, Moorhead State College. $1,575,900. CD 7/13.

▲ **Minn., Robbinsdale**—SCHOOLS—Bd. Educ., Independent School Dist. No. 281 voted $2,100,000 bonds Oct. 12, schools. CD 10/1.

▲ **Minn., Rochester**—HOSPITAL—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Ellerbe & Co., 333 Sibley St., St. Paul, continuous treatment bldg., at Rochester State Hospital. $1,464,981. CD 7/31.

▲ **Minn., Winona**—SCIENCE, etc.—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Eckert & Carlson, 300 Exchange Bldg., science bldg., $1,085,150. CD 8/3; heating plant and service lines, $630,000, Winona State College. Helmick & Lutz, 1801 Nicollet Ave., Minneapolis, consult. engrs. CD 7/13.

▲ **N. J., Cliffside Park**—SCHOOL—Bd. Educ., Borough of Cliffside Park, project and bonds to be submitted to voters Dec. 3, high school addn. $1,300,000. Robert Cadien, 570 Gorge Rd., archt.

▲ **N. J., Middletown**—SCHOOL—Bd. Educ., Middletown Twp., Tindall Rd., voted referendum on bonds and project Oct. 13, elementary school and addns., $1,750,000; Intermediate School No. 1, $1,000,000; Intermediate School No. 2, $1,000,000. Frederick Elsasser, 2013 Morris Ave., Union, archt. CD 10/8.

▲ **N. Y., Copiaque**—SCHOOLS—Copiaque Union Free School Dist., Great Neck Rd., referendum Nov. 14, schools. $1,985,000.

▲ **N. Y., New York**—LIBRARY—Dpt. Parks, Arsenal Bldg., Central Park, 64th St. and 5th Ave., Zone 21, plans by Brown, Lawford & Forbes, 224 East 46th St., Thomas J. Watson Library, at Metropolitan Museum of Art, 5th Ave. and East 82nd St. $2,000,000. CD 1/25/43.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, plans by Lama, Proskauer & Prober, 395 Pearl St., Brooklyn, N. Y., Proj. NYC-29, Columbia Houses, four 21 story apartments, Columbia, Delancey, Pitt and Stanton Sts. $23,265,000. CD 4/20/56.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, plans by Lama, Proskauer & Prober, 395 Pearl St., Brooklyn, Proj. NY5-32 Samuel Gompers Houses, two 20 story apartments, Columbia, Delancey, Pitt and Stanton Sts. $8,864,000. To go ahead 1960. CD 4/20/56.

▲ **N. Y., Pearl River**—SCHOOL—Village, Village Hall, referendum Nov. 19, high school. $2,500,000. Caudill, Rowlett & Scott, P.O. Box 60, Corning, archts.

▲ **N. Y., Syosset**—SCHOOL—Central School Dist. No. 2, Woodbury Rd.; plans by Eggers & Higgins, 100 E. 42nd St., New York, 2 story high school $2,898,000. Eipel Engineering, 101 Park Ave., New York, structural engrs. Cosentini Assoc., 20 Columbus Circle, New York, mech. engrs. CD 10/14.

▲ **N. C., Chapel Hill**—DORMITORY—University of North Carolina, plans by Graves & Toy, 118½ E. 4th St., Charlotte, men's dormitory, $1,800,000. CD 2/16.

▲ **N. C., Goldsboro**—HOUSING—Goldsboro Housing Auth., Fairview Homes, plans by Billy Griffin, Borden Bldg., 230 unit Housing Project NC 15-5, NC 15-6, $2,000,000.

▲ **N. C., Reidsville**—HIGH SCHOOL—School Bd. plans by Schendl & Schendl, 200 S. Martin St., Seinior High School, $1,000,000. W. H. Gardner, Jr. & Assocs., 1591 Woodburn Rd., Durham, structural engrs. Cofer, Rouse & Jelinski, 1023 Arnold St., Greensboro, plumbing, heating and electrical engrs.

▲ **N. C., Winston-Salem**—HOSPITAL—Bd. Comrs. Forsyth Co., 349 Arbor Rd., plans by Lashmit, James, Brown & Pollock, 865 W. 4½ St., hospital, $3,750,000.

▲ **O., Streetsboro**—SCHOOL—Bd. Educ., school. $1,385,007.

▲ **O., Suffield**—HIGH SCHOOL—Bd. Educ., Field Local School Dist., Box 116, high school. $1,000,000.

▲ **Tex., Pampa**—COLLEGE—Pampa Ind. School Dist. plans by Cantrell & Co., Inc., Hughes Bldg., Junior College. $1,000,000. CD 8/7/58.

▲ **Tex., San Antonio**—SCHOOLS—Northeast Ind. School Dist.; 7015 N. McCullough Ave., plans by Marmon

(Continued on page 89)

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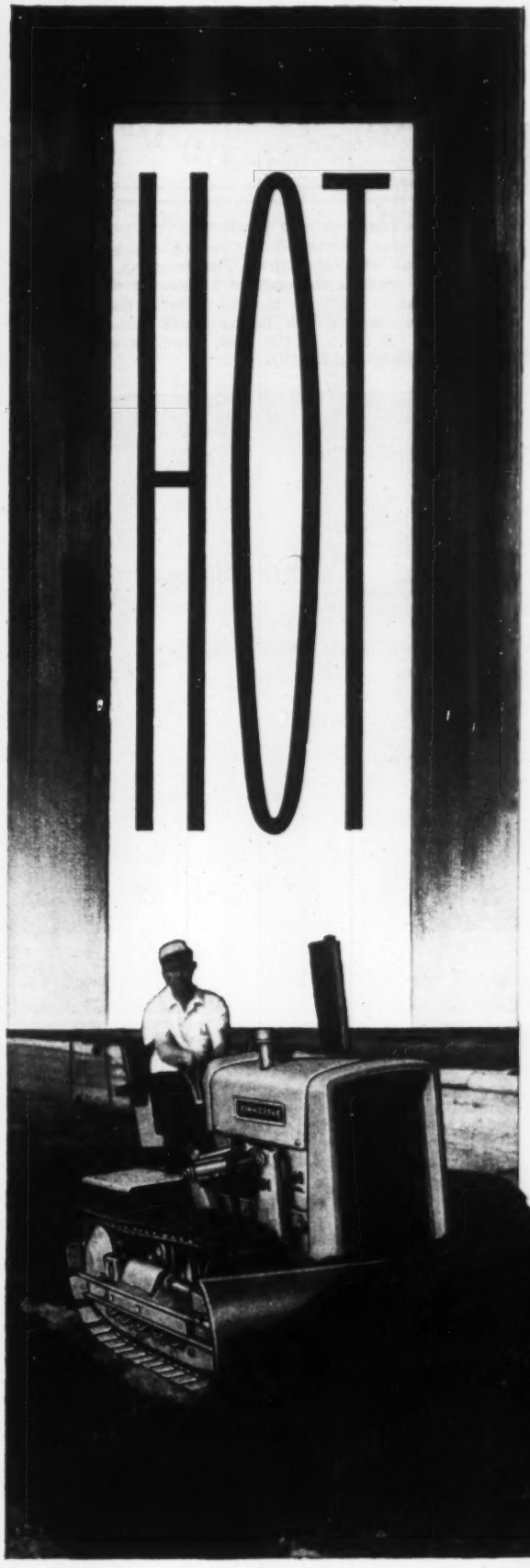

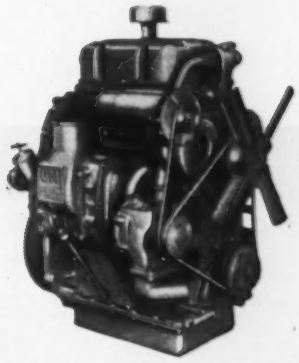

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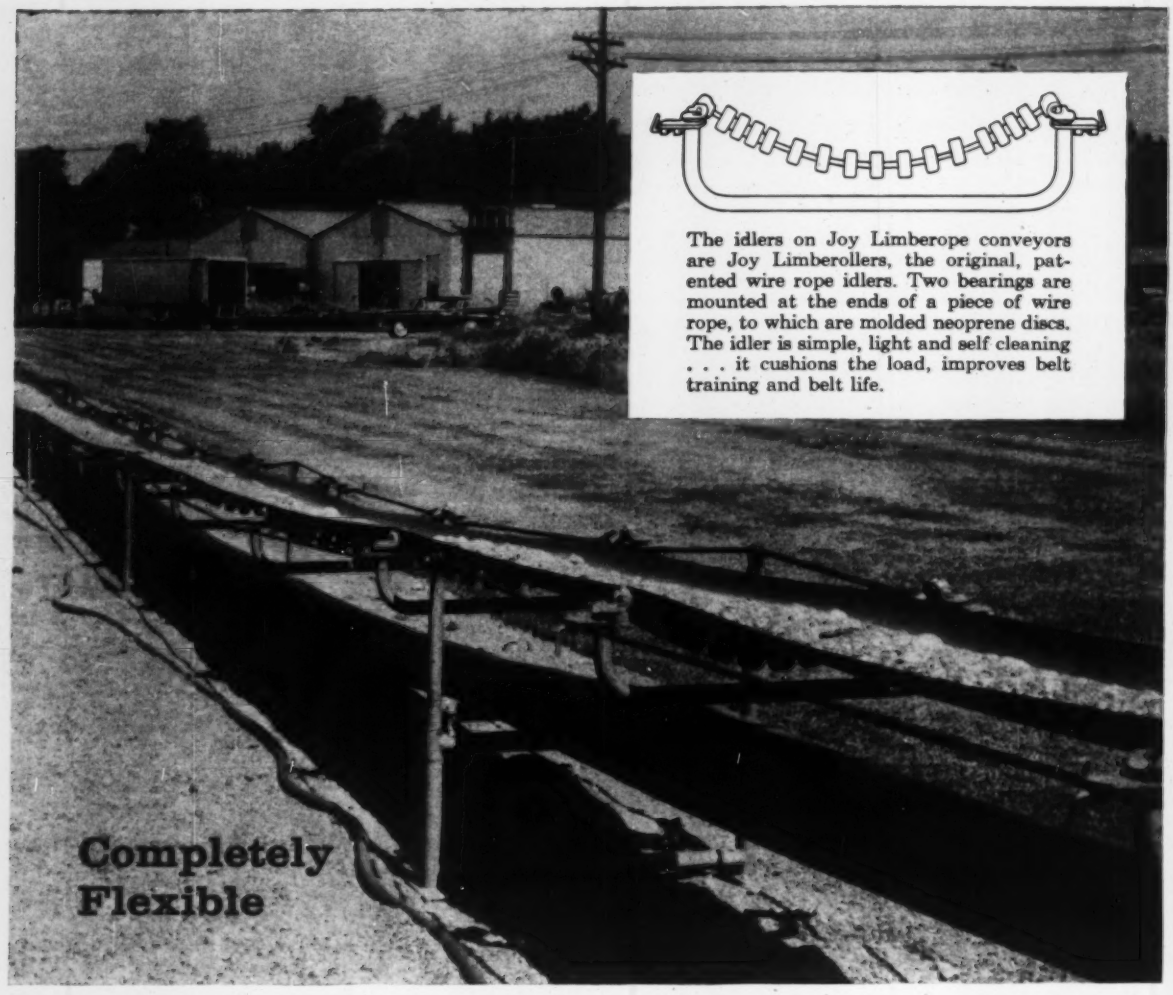

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(Continued from page 86)

& Mok & Wm. D. Jones, South Texas Bldg., Junior High School, $1,000,000, plans by Harvey P. Smith & Assocs., 117 El Prado Dr., Junior High School, $1,100,000. CD 12/19/58.

▲ **Utah, Logan**—SCHOOL—Cache County School Dist., Logan, defeated bonds Oct. 6, schools. $2,000,000. CD 9/21.

▲ **Va., Fairfax** — LIBRARIES — Bd. Suprvs., Fairfax County, bond referendum Nov. 3, six libraries. $2,000,000. CD 2/13.

▲ **Va., Richmond**—CITY JAIL—City, The Mosque, city jail, 17th St. Bottom. $1,500,000.

▲ **Wash., Lacey**—SCHOOL—North Thurston School Dist. 3, plans by W. A. Johnson, 3506 Broadway, Everett, Junior High School. $1,200,000.

▲ **N. S. Middleton**—HOSPITAL—Town, Town Hall, 3 story, brick hospital, $1,000,000.

▲ **Ont., Toronto**—HOSPITAL—Queensway General Hospital, Evans Ave., 230 bed hospital expansion, $2,500,000.

▲ **Que., Montreal** — SCHOOL — Provincial Secretary's Dpt., Parliament Bldgs., Quebec City, plans by Roland Dumais, 3995 Sherbrooke St. E., commercial high school administration bldg., near Maplewood Ave. Over $3,500,000. Letendre, Monti & Assocs., 3810 Laval Ave., consult. engrs. CD 10/12.

▲ **Que., Montreal**—SCHOOL—Protestant School Bd. of St. Laurent, St. Laurent, plans by deBelle & White, 5925 Monkland Ave., Sir Winston Churchill High School, Cote Vertu Rd. $2,000,000.

▲ **Que., Verdun**—HIGH SCHOOL, etc.—Verdun Catholic School Comn., 4480 Blvd. Champlain, plans by J. Armand Dutrisac, 1069 Beatty Ave., and Jean Maurice Dube, 1001 2nd Ave., high school, 2 teachers residences, $3,000,000. CD 5/27.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—Bd. Trustees, Birmingham Baptist Hospitals, 2234 Highland Ave., plans by Charles McCauley, 1917 5 Ave. S., 7 story, hospital, Ridge Park Ave. and 22 St. S. $5,270,000. CD 10/29/57.

▲ **Ala., Montgomery**—OFFICE—Alabama Power Co., Alabama Power Bldg., Birmingham, 3 or 4 story office, in 200 block of Exter and Washington Aves. $1,500,000. Constr. 1960.

▲ **Calif., San Diego**—BANK AND OFFICE, etc.—C. A. Smith, National Steel & Shipbuilding Corp., Harbor Dr. and 28th St., plans by Frank L. Hope & Assocs., 1447 6th St., 22 story bank and office, 7 story parking garage. $10,000,000.

▲ **Colo., Denver**—BANK—Boettcher Foundation, 828 17 St., plans by James S. Sudler, 818 17 St., lobby remodeling and installing exterior white concrete screen to 12 story First National Bank to be occupied by American National Bank. $1,000,000.

▲ **Colo., Denver**—OFFICE—Industrial Federal Savings & Loan Assocs., 1630 Stout St., plans by Raymond H. Ervin & Assocs., 1500 Denver Club Bldg., 34 story, bsmnt., 100 x 125 ft. office, with 21 story towers, 17 and California Sts. $6,000,000. (Correction—architects address.) CD 10/15.

▲ **Colo., Durango**—HOSPITAL—Sisters of Mercy, Mercy Hospital, plans by Keith W. Mauch, Masonic Bldg., 3 story, brick, 100 to 120 bed hospital addn. $1,000,000. CD 2/27.

▲ **Conn., Cheshire**—HOUSES—Anderlot Constr. Co., Inc., 7 Fenn Rd., plans by Charles H. Abramowitz, 52 Goffe Terrace, New Haven, 48 houses "Radmere Estates," Jinny Hill Rd. $1,200,000. CD 9/18.

▲ **Conn., Hartford**—OFFICE—Aetna Life Insurance Co., 151 Farmington Ave., 130,000 sq. ft. air-conditioned brick, home office East Wing addn., 151 Farmington Ave., $3,375,000.

▲ **D. C., Wash.**—APARTMENT—Webb & Knapp National Corp., 1012 14 St. N. W., plans by I. M. Pei & Assocs., 385 Madison Ave., New York, N. Y., 256 apartment units, 6 St. between K and M Sts. S. W. $3,000,000.

▲ **D. C., Wash.**—HOUSES—Webb & Knapp National Corp., 1012 14 St. N. W., plans by I. M. Pei & Assocs., 385 Madison Ave., New York, N. Y., 300 town houses, north of "M" St. S. W. $7,500,000.

▲ **Fla., Miami** — SHOPPING CENTER — Miami Garden Corp., c/o Anderson & Bergamaschi, archts., 124 Almeria Ave., Coral Gables, 116,000 sq. ft. shopping center, SE corner NW 183 St. and 47 Ave. $1,000,000.

▲ **Ga., Marietta**—HOME FOR AGED—North Georgia Conference of The Methodist Church, 1905 N. Decatur Rd. N.E., Atlanta, plans by Cooper, Barrett, Skinner, Woodbury & Cooper, Henry Grady Bldg., Atlanta, Home for Aged. $3,000,000.

▲ **Ill., Chicago** — APARTMENT — American National Bank & Trust Co., trustee c/o Loewenberg & Loewenberg, archts., 120 S. LaSalle St., 15 story, brick, stone apartment, southwest corner Sheridan and Hollywood Ave. $2,500,000.

▲ **Ill., Joliet**—MERCHANDISING CENTER—Ford C. June, 28 E. Jefferson St., 3 story, merchandising center, Chicago, Webster, Scott and Benton Sts. $1,500,000.

▲ **Mass., Brookline**—APARTMENTS—Owner, c/o T. Dennie Boardmen, 1 Court St., Boston, plans by Charles H. Cole, 55 Waltham St., Lexington, 18 garden type two family apartments between Brookline Country Club and Brookline Municipal Golf Course. $1,100,000.

▲ **Mass., Cambridge**—RESEARCH—Harvard University, Harvard Square, Public Research Bldg. $1,800,000, Center for World Religions, $425,000. Constr. 1960.

▲ **N. J., Hammonton**—HOMES AND SHOPPING CENTER—Daczko, Inc., c/o David Shapiro, 306 S. 19 St., Phila., Pa., residential development, incl. 500 homes, commercial shopping center, on 1,461 acres in Mullica Twp. Over $7,500,000.

▲ **N. Y., New York**—APARTMENT—Coates Realty Corp., 720 Fifth Ave., Zone 19, plans by Horace Ginsbern & Assocs., 205 E. 42nd St. Zone 17, apartment, 17783 East 75th St. and 1310-16th 3rd Ave. $2,000,000.

▲ **N. Y., New York**—APARTMENTS—Dupdi, Inc., 209 E. 56 St., Zone 22, plans by Pomerance & Breines, 630 Third Ave., Zone 17, 9 story apartment, 220 E. 56 St., $553,000; 12 story apartment, 225 E. 57 St., $1,400,000.

▲ **N. Y., New York**—APARTMENT—Gallery House, Inc., 60 E. 42 St., Zone 17, plans by Horace Gensbern & Assocs., 205 E. 42 St., apartment, 73-77 W. 55 St. and 1360-1366 Sixth Ave. $1,750,000.

▲ **N. Y., New York**—APARTMENT—Realty Equities Corp., c/o H. I. Feldman, archt., 415 Lexington Ave., Zone 17, 14 story apartment, 216-220 E. 67 St. $1,300,000.

▲ **N. Y., New York**—APARTMENT—Ulster Holding Corp., 16 Court St., Brooklyn, Zone 2, plans by Philip Birnbaum, 12 East 48th St., Zone 17, apartment, 1652-58 First Avenue and 401-17 East 86th St. $2,000,000.

▲ **N. Y., Potsdam**—ENGINEERING-SCIENCE BLDG.—Clarkson College of Technology, constr. Engineering-Science Bldg. $1,500,000.

▲ **N. C., Charlotte**—MOTOR HOTEL—Transcontinental Inn, Liberty Life Bldg., plans by Louis H. Asbury & Assocs., 121 Brevard Court, motor hotel. $1,000,000.

▲ **N. C., Winston-Salem**—MOTOR HOTEL—Transcontinental Inn, Liberty Life Bldg., Charlotte, plans by Louis H. Asbury & Assocs., 121 Brevard Court, Charlotte, motor hotel. $1,000,000.

▲ **Okla., Enid**—ADMINISTRATION—Phillips University, 102 S. University St., plans by M. M. Wheeler, Bass Bldg., administration bldg. $1,000,000. CD 10/19/55.

▲ **Pa., Phila.**—APARTMENT—Herbert Miller, 6709 Castor Ave., plans by Abraham R. Hyman, 912 Gilham St., Phila., 2 apartments, Bustleton and Tustin Aves., $1,000,000.

▲ **Pa., Phila.**—LAW SCHOOL—University of Penna., 3025 Walnut St., plans by Carroll Grisdale & Van Alen, 6 Penn Center, law school library and law school modernization, $1,500,000. Hagy & Widdicombe, 6 Penn Center Plaza, Phila., consult. engrs. CD 7/2/57.

▲ **S. C., Charleston**—OFFICE—Public Savings Life Insurance Co., P. O. Box 7942, Sair Park Station, Dallas, Tex., plans by Lyles, Bissett, Carlisle & Wolff, 1321 Bull St., Columbia, 12 story office, $2,100,000.

▲ **S. C., Columbia**—SHOPPING CENTER—W. H. Mencken, c/o Walter A. Keenan & Co., Security Federal Bldg., plans by Lyles, Bissett, Carlisle & Wolff, 1321 Bull St. shopping center, $1,300,000.

▲ **S. C., Greenville**—PARCEL POST ANNEX, etc.—General Services Admin., F St. between 18th and 19th Sts., Wash., D. C., plans by J. E. Sirrine Co., 215 S. Main St., parcel post annex and garage, Lease-Purchase Project, $1,500,000.

▲ **Tex., Amarillo**—OFFICE—The Reva Corp., c/o Jack C. Vaughn, Amarillo, 10 story, bsmnt., rein.-con. frame-stone, air-conditioning, etc., office, $1,250,000. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, consult. engr.

▲ **Tex., Dallas**—OFFICE—Southwestern Bell Telephone Co., 308 S. Akard St., 8 top stories on present office, 21 story addn. with 2 underground levels. $9,000,000.

▲ **Tex., Houston**—OFFICE—L&R Bldg. Co., c/o Century Bldg., office, $2,500,000.

▲ **Tex., Houston** — SHOPPING CENTER — Louis Gale, 4023 Grennoch St., plans by W. J. Wisdom, 1116 Hawthorne St., Midway Shopping Center, $2,000,000; site area earthwork, $60,000; paved area and auto parking center, $100,000, Stella Link Rd. and Aberdeen Way.

▲ **Tex., Houston**—RETAIL STORE—Northline Shopping Center, c/o Theo. W. Berenson, c/o 500 Gulfgate Mall, 200,000 sq. ft. masonry retail store, U.S. Hy. 75 and Crosstimbers area, 2nd proj. $3,500,000. Montgomery Ward & Co., lessee.

▲ **Tex., Lubbock**—SHOPPING CENTER—Caprock Center Inc., c/o Roy Furr, R.R. & R.C. Martin, c/o Brasher, Spencer & Govette, archts., 2118-34th St., shopping center. $1,100,000.

▲ **Va., Bon Air**—SHOPPING CENTER—Robious Inc., c/o White, 721 E. Main St., Richmond, shopping center, State Rte. 147 and Rte. 675. $5,000,000.

▲ **Va., Norfolk**—APARTMENT-MOTEL, etc.—Community Development Co., Inc., Oscar Steiner Pres., 9th-Chester Bldg., Cleveland, O., plans by Max Ratner, 9th-Chester Bldg., Cleveland, O., 11 story 100 apartment suites, apartment-motel, golf course, swimming pool, Ocean View. $3,000,000.

▲ **Va., Richmond**—CHURCH, etc.—St. Paul's Episcopal Church, 9th and Grace St., plans by Baskervill & Son, 2313 W. Cary St., church expansion, $1,005,000; office and store bldg., 2 sub-basement parking decks, $1,500,000.

▲ **Wash., Renton**—HOUSES—A. Balch Community Bldrs., 8050 35 Ave. N.E., Seattle, 165 houses, President Park and Sierra Heights. $2,300,000. Work may start next year.

▲ **Alta., Edmonton**—OFFICES—Owner, c/o Skakun & Naito, archts., 30e Noble Bldg., 10 story, 100 professional offices, stores, main level, 190 car underground and open garage, Jasper. $3,000,000.

▲ **Alta., Edmonton**—HOTEL—Eugene Pechet & Assocs., Ltd., c/o Hemingway & Laubenthal, archts., 14207 Stoney Plain Rd., 50 room hotel, 250 car parking area, Stony Plain Rd. $1,000,000.

▲ **Ont., Toronto**—OFFICE—British American Oil Co. Ltd., (Ontario Div.), 800 Bay St., plans by Crang & Boake, 79 Huntley St., 5 story, bsmnt., 82x180 ft., about 90,000 sq. ft. office, northeast corner Mt. Pleasant Rd. and Davisville Ave. Reicher, Bradstock, & Assocs., Ltd., 600 Eglinton Ave. E., engrs. CD 4/15.

▲ **Que., Montreal (Dorval)** — MOTOR HOTEL — Skyline Motor Hotel, c/o Basil Capes, archt., 5140 Dundas St. W., Toronto, Ont., motor hotel, Metropolitan Blvd. $1,500,000.

▲ **Que., Three Rivers**—ORPHANAGE, etc.—Les Religieux de St. Vincent de Paul, plans by Gascon & Auger, 934 St. Catherine St. E., Montreal, 4 story, bsmnt., rein.-con., brick, stone orphanage, administration bldg., Des Forges Blvd. $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ariz., Tempe**—POWER PLANT—Arizona Public Service Co., 501 S. 3 Ave., Phoenix, Ocotillo Power Plant, 2nd Section, East 8 St. $4,700,000.

▲ **Fla., Jacksonville**—OIL REFINERY—Frontier Refining Co., 4040 E. La Ave., Denver, Colo., oil refinery, tank farm, docks. $10,000,000. Reynolds, Smith & Hills, 227 Park St., Jacksonville, consult. engrs.

▲ **Fla., Riviera Beach**—RESEARCH AND DEVELOPMENT CENTER—Minneapolis-Honeywell Regulator Co., 2753 4 Ave., Minneapolis, Minn., plans by Ellerbe & Co., 333 Sibley St., St. Paul, Minn., 1 story, 40,000 sq. ft. Research and Development Center for Semiconductor Div. $1,000,000. CD 10/19.

▲ **Ill., Rochelle**—PLANT—Swift & Co., U. S. Yards, Chicago, meat packing plant. $5,000,000.

▲ **Ind., Indianapolis**—DISTRIBUTION CENTER—Western Electric Co., 2525 Shadeland Dr., distribution center, east of Shadeland Ave. plant. $3,500,000. CD 5/27/48.

▲ **La., Bastrop**—PAPER MILL, etc.—International Paper Co., Bastrop, paper mill expansion, incl. 2 high pressure boilers, 20,000 kw. turbine, lime kiln, etc. $4,500,000.

▲ **Mo., Neosho**—OXYGEN PLANT—Linde Co. (Div. Union Carbide Corp.), 30 E. 42nd St., New York, N. Y., liquid oxygen plant, site of former Camp Crowder Army Post.

▲ **N. J., Clifton**—DISTRIBUTION CENTER, etc.—General Foods Corp., North St., White Plains, N. Y., 159,000 sq. ft. distribution center and sales office, Garden State Parkway and Broad St. $1,500,000. To go ahead 1960.

▲ **N. M., Carlsbad**—GASLINE PLANT—Pan-American Petroleum Corp., Hobbs, and Hondo Oil & Gas Co., Hondo, Tex., 25,000,000 cu. ft. daily capacity gasoline plant, Empire Abdo field of North Central Eddy Co., near here. $1,000,000.

▲ **Va., Lawrenceville** — FACTORY — Craddock-Terry Shoe Corp., 56 9th St., Lynchburg, 80,000 ft. shoe factory, parking lot. $1,000,000.

▲ **Va., Lynchburg**—FACTORY—Craddock Terry Shoe Co., 56 9th St., shoe factory, 50 acre site, Lynchburg Expressway. $2,500,000.

▲ **Sask., Regina** — REFINERY — Consumers' Cooperative Refineries Ltd., 9th N. St. (platform-unifying process) refinery expansion. $2,000,000.

UNCLASSIFIED

▲ **Alaska**—POWER DISTRIBUTION LINES—Golden Valley Electric Assn., Fairbanks, 120 mi. power distr. lines, 15 mi. 69 kv transmission lines and three substations. $2,386,000.

▲ **Calif., Moss Landing**—SHIPPING and RECREATIONAL AREA—Moss Landing Harbor Dist., Moss Landing, converting Moss Landing into major shipping and recreational area (500 boat slips, deep water terminal for ships, at inner harbor, residential marina, 174 slips for fishing boats and 225 boat berths). $1,200,000. John A. Blume & Assoc., 612 Howard St., San Francisco, consult. engrs.

▲ **Md., Annapolis**—MARINA—Bay Bridge Harbor Corp., c/o J. E. Greimer Co., consult. engrs., 1106 N. Charles St., Baltimore, Zone 1, 1 and 2 story masonry marina, incl. parking areas, stores, yacht club, shops, swimming pool west end Chesapeake Bay Bridge, near here. $3,000,000.

▲ **O., Enon**—RACE TRACK—Enon Racing Club, Benj. Cline, agt., Spring Valley, one-mile horse racing track. $2,000,000.

▲ **Ore., Portland**—DRYDOCK—Port of Portland Comn., 3070 SW Front St., drydock. $7,300,000. Frederic R. Harris, 27 William St., New York, N. Y., consult. engrs., made survey.

▲ **Texas**—ELECTRIC POWER SYS.—Sam Houston Electric Co-operative, Livingston, electric power sys. imprvs. and expansion, Livingston, Polk Co., $1,095,000; rural electric power transmission lines, Livingston, Polk Co., $150,000. CD 7/8/55.

▲ **Va., Fairfax** — PARKS AND RECREATION — Bd. Supervs., Fairfax County, bond referendum Nov. 3, parks and recreation. $4,800,000. CD 2/13.

GALLERY NO. 3 OF

VALUED CLIENTS

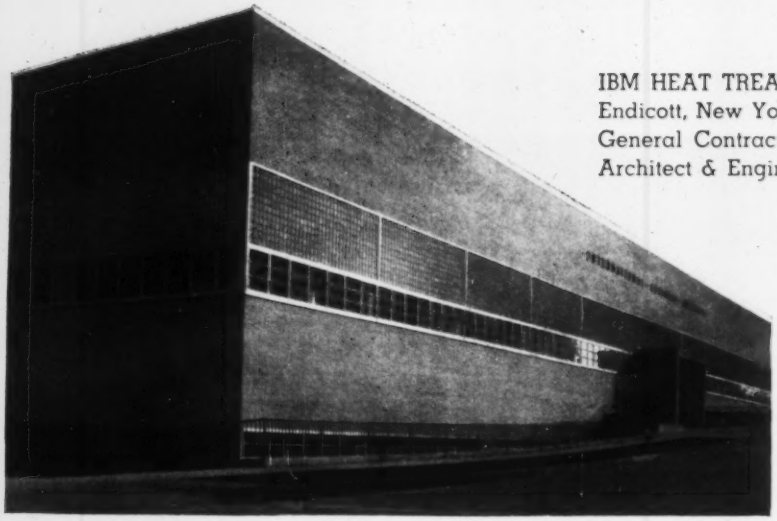
STATLER HILTON HOTEL
Hartford, Conn.
General Contractor: George A. Fuller Co
Architect: Wm. B. Tabler Associates
Engineer: Smith & Silverman

In 1895 Lord Electric Company announced the unconditional guarantee of all workmanship and materials on every contract, large or small. That policy has never been breached, and is as unshakable in 1959 as on the day of its first utterance. Combined with the company's technical progress and its vast experience, it is a policy that has earned Lord an impressive roster of outstanding clients in all parts of the country.

These include a large proportion of America's leading business firms, as well as many government and civic agencies.

Other factors in Lord's long-time leadership are its strong financial position and its excellent labor relations throughout the nation. Thus the company can securely undertake jobs of any size, and can staff such jobs with America's finest electrical construction workmen, anywhere, and in any number required.

Here are some more of our valued clients. . . .



IBM HEAT TREAT & PLATING BUILDING
Endicott, New York
General Contractor: Sordoni Construction Company
Architect & Engineer: Smith, Hinchman & Grylls, Inc.

CIT FINANCIAL CORPORATION
New York, N. Y.
General Contractor: George A. Fuller Co.
Architect: Harrison & Abramovitz
Engineer: Edward E. Ashley

ITT FEDERAL DIVISION
Clifton, New Jersey
General Contractor:
Turner Construction Co.
Architect & Engineer:
Giffels & Vallet

MUTUAL LIFE INSURANCE COMPANY
New York, N. Y.
General Contractor: Turner Construction Co.
Architect: Shreve, Lamb & Harmon Associates
Engineer: Clark, McMullen & Reilly

LORD ELECTRIC COMPANY, INC.

BOSTON NEW YORK PITTSBURGH PORTLAND, ORE. RICHLAND, WASH.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 9 Connecticut November 10 Massachusetts

▲ **MAINE**—State Hy. Comn., Augusta, Me.—**The Bridge Constr. Corp.**, 283 Water St., Augusta, Me., CA **$636,526** (7 bidders), b. conc. road 4.723 mi. City of Calais, FAP No. F-044-2 (9) Washington Co. CD 10/5; CA **$223,199** (6 bidders), bit. grav. road and bridge structure 2.135 mi. Little Squaw Mountain and Big Squaw Mountain, FAS Proj. S-0268 (2) Piscataquis Co. CD 10/12;

Me.—**Forest Frederick**, Pittsfield, Me., CA **$198,286** (6 bidders), b. conc. road and part bridge structure 2.229 mi. Belmont and Morrill, FAS Proj. S-0215 (7), Waldo Co. Bids Oct. 21. Grand total $1,058,007. CD 10/12.

BUILDINGS—LB & CA

Viette Constr. Co., Littleton, N. H., CA Approx. **$700,000**, SHOPPING CENTER, Montpelier Rd., BERLIN, VT. Vermont Shopping Center, Inc., c/o Gordon Woods, archt., 42 Eastern Ave., St. Johnsbury, Vt.

Rose D'Eramo, 1727 Madison Ave., Bridgeport, Conn., Owner Builds, **$540,000**, 54 HOUSES, Madison Ave., BRIDGEPORT, CONN. CD 9/18/58.

Peter Purcell Constr. Co., 36 George Ave., Norwalk, Conn., Owner Builds, **$650,000**, 50 HOUSES, Triangle St., DANBURY, CONN. Kenneth Rogers, Sherman, Conn., engr.

▲ **Zandonella, Inc.**, 70 Chase St., Bridgeport, Conn., LB **$2,724,400**, (14 bidders), Jonathan Law High SCHOOL, Devon, MILFORD, CONN. Town, Bd. Educ., 38 W. River St., Milford, Conn., Bids Oct. 22. CD 9/22.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 12 Pennsylvania
STREETS AND ROADS
November 10 Maryland November 17 New Jersey

▲ **New York**—BA 11/24—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, furnishing, delivery thereof f.o.b. destination Niagara Falls, Niagara Co. rails and accessories for Lewiston and Tuscarora Power Plant and Waterways intake gate transfer car, Spec. No. DA-N-23035 Niagara Contr. No. NP44, Plans $10 per initial set, $5 per set for addnl. sets, not refundable. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15/57.

▲ **NEW YORK**—BA 12/2—Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York, Zone 35,

Narrows Bridge, Contr. No. NB-1B, Brooklyn Tower Pier, Narrows Bridge, Contr. No. NB-1S, Staten Island Tower Pier. Plans deposit $25. John B. Peterkin, 452 5th Ave., Aymar Embury 2nd, 150 E. 61st St., Edward D. Stone, 38 E. 65th St., New York City, archts., and Ammann & Whitney, 118 8th Ave., New York, N. Y., consult. engr. have agreed upon basic proportions for towers and anchorages for Narrows Bridge. CD 1/20/55.

BUILDINGS—BA

N. J., Lakewood—SCHOOL—BA 11/10—Lakewood Twp. Bd. Educ., Spruce Street Elementary School, $662,000. Plans deposit $25. Micklewright & Mountford, E. Stuyvesant and Prospect Sts., Trenton, archts.-engrs. CD 11/18/58.

▲ **Md., Baltimore**—BIO-PHYSICS—BA 11/13—John Hopkins Hospital, Broadway and Monument St., brick, concrete, steel, block bio-physics bldg., Monument St. $1,500,000. Fisher, Nes & Campbell & Assocs., 2120 N. Charles St., Zone 18, archts. CD 8/14/57.

▲ **N. Y., New York**—BLDG. IMPRVS.—BA 12/9—Dpt. P. Wks., Rm. 2200, Municipal Bldg., Zone 7, Contr. 1, general constr., Contr. 2, plumbing work, Contr. 3, heating, ventilating and refrigeration work, Contr. 4, electrical work for new and altered facilities for Rikers Island Penitentiary, Bronx Boro. Plans deposit $80. CD 9/15/55.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**John Arborio, Inc.**, W. Cedar St., Poughkeepsie, N. Y., CA **$7,851,071**, 9 in. c. conc. pavt. variable width 6.31 mi. (access 4.77 mi.) 8 hy. seps. comp. beams, 7 bridges Windsor-Deposit, SH 5338, Binghamton-Windsor Pt. 4, SH 5241 Binghamton-Windsor Pt. 3, SH 5148 Windsor Village, Main St. SH 1239, Rte. 17, FARC 59-115. Proj. F-FG 344(25), Broome Co.,

N. Y.—**Arute Bros. Inc.**, 560 S. Main St., New Britain, Conn., CA **$3,903,706**, b. conc. pavt. Type 1A, 5.55 mi. (2.29 mi. access) misc. work 0.02 mi. 4 hy. seps. twin comp. I-beams, 1 hy. sep. rein.-con. rigid frame twin, 1 bridge rein.-con. twin box, Interstate Rte. 505 Section 7AB-2 (Pierrepont Manor to Adams) and SH 184; C.R.107, C.R.125, C.R.112 & C.R.110, Rte. 81, FISH 59-16, Proj. I-81-3(13)135, Jefferson Co. Bids Sept. 10. CD 9/11, under LB.

Foster-Newman Contg. Co., 3622 13th Ave., Brooklyn 18, N. Y., CA **$982,600**, Contr. 1002-2P-28, sewage disposal Dist. No. 2, Bay Park, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old County Court House, Mineola, N. Y. Bids Sept. 8. CD 9/14, under LB.

John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y., CA **$525,016**, Contr. No. 1124-B, paving, curbs, sidewalks and drainage 10,550 ft. plus or minus Newbridge Ave. from Newbridge Rd. northerly to Hempstead-Farmingdale Turnpike, East Meadow, Town of Old Hempstead, MINEOLA, N. Y. Comr. P. Wks., Nassau County, Old County Court House, Mineola, N. Y. Bids Sept. 23. CD 9/28, under LB.

▲ **James McHugh Constr. Co.**, 6449 South Park Ave., Chicago 37, Ill., LB **$1,039,370**, (11 bidders), reconstruction East-Bound section of Benning Road Viaduct, WASH., D. C. D. C. Govt., Highway Dpt., 499 Pa. Ave., N. W., Wash., D. C. Bids Oct 27, CD 10/2.

BUILDINGS—LB & CA

▲ **Carl W. Ek & Son**, 132½ N. First St., Olean, N. Y., CA **$1,316,898**, County HOME and INFIRMARY, DUNKIRK, N. Y. Bd. Supervs. Chautauqua Co., Court House, Mayville, N. Y. Bids Sept. 25. CD 9/9.

▲ **Wedgewood Greens Homes**, c/o Henry A. Klar Realty, 165 Hempstead Turnpike, West Hempstead, N. Y., Owner Builds, **$1,000,000**, 48 HOUSES, Jericho Turnpike, east of Broadway, JERICHO, N. Y.

▲ **Romagnino Constr. Co.**, 99 River Ave., Cliffside Park, N. J., CA **$1,201,450**, general contract HIGH SCHOOL, ENGLEWOOD, N. J. City, City Hall, Englewood, N. J. Bids Sept. 29. CD 10/6, under LB.

▲ **Melehan Constr. Co.**, Foxhedge Rd., Saddle River, N. J., Owner Builds, **$1,000,000**, 35 HOUSES, Lynn St. and Mannix Rd., HARRINGTON PARK, N. J.

John J. Donnelly, Inc., Audubon, N. J., CA Over **$500,000**, SCHOOL and CHAPEL, LEVITTOWN, N. J. Roman Catholic Diocese of Trenton, 1101 Lawrenceville Rd., Trenton, N. J. Bids Oct. 13. CD 10/5.

▲ **Evesboro West Corp.**, c/o Leon Shiskin, Marlton, N. J., Separate Contracts, **$1,200,000**, RESIDENTIAL DEVELOPMENT, (100 homes), off Rte. 73, MARLTON, N. J.

▲ **Irwin & Leighton, Inc.**, 1505 Race St., Phila., Pa., CA **$1,500,000**, RECORD MFG. PLANT, PITMAN, N. J. Columbia Broadcasting System, Inc., 485 Madison Ave., New York, N. Y. Ammann & Whitney, 118 8 Ave., New York, N. Y., engrs. Bids Oct. 6. CD 9/24.

▲ **Stanford Lipschultz**, Chalfont, Pa., Separate Contracts, **$1,250,000**, 73 HOMES, Rte. 202, CHALFONT, PA.

▲ **A. J. & S. A. Altman**, 302 Levering Mill Rd., Bala Cynwyd, Pa., Separate Contracts, **$4,500,000**, 300 HOMES, Knights Rd., etc., PHILA., PA.

William F. Sutter, Nescopeck, Pa., CA **$879,477**, general contract SPECIAL SCHOOL, Parkside Drive, READING, PA. Reading School Dist., Bruckman and Freemont Aves., Reading, Pa. CD 9/25, under LB.

S. Elmer Armiger, Inc., 714 Park Ave., Baltimore 1, Md., LB **$710,700**, Base Bid (9 bidders), 1 story, brick, Fort Garrison ELEMENETARY SCHOOL, near Baltimore, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Oct. 21. CD 10/12, under Md., Baltimore.

▲ **County Center**, c/o Stanley J. Shaftel, archt., 149-09 Willetts Point Blvd., Whitestone, N. Y., Own Forces, $3,000,000, 135,000 sq. ft. first section SHOPPING CENTER, Ogletown, near NEWARK, DEL.

Ernest DiSabatino & Sons, 2601 W. 4 St., Wilmington, Del., CA **$701,000**, enlargement Stanton JUNIOR HIGH SCHOOL, STANTON, DEL. Stanton School Dist., Stanton, Del. Bids Oct. 14. CD 10/22, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 13 Kentucky
STREETS AND ROADS
November 13 Kentucky November 18 Louisiana

▲ **La., New Orleans**—BA 12/21—City, Purchasing Div., Rm. 10, City Hall, Prop. 1382 brick, concrete block, aluminum siding 400 ton incinerator. Extended date. Plans deposit $25. CD 10/21.

BUILDINGS—BA

Va., Ferrum—DORMITORY—BA 11/24—Ferrum Junior College, dormitory, $750,000. Plans deposit $25. Walford & Wright, 103 E. Cary St., Richmond, archts.

HEAVY CONSTRUCTION—LB & CA

William Muirhead Constr. Co., P.O. Box 2021, Durham, N. C., CA **$697,453**, street imprvs., DURHAM, N. C. City, City Hall, Durham, N. C. Bids Oct. 16, awarded Oct. 20.

SOUTH CAROLINA—State Hy. Dpt., Hotel Jefferson, Columbia, Bids opened 10/20,

S.C.—**Jos. W. Barnwell, Jr.**, Pinckney St., Columbia, S.C., LB **$857,022**, (12 bidders), 1,901 ft. 4 in. rein.-con., prestressed concrete, structural steel bridge over Great Pee Dee River and two 1,020 ft. rein.-con. prestressed concrete, structural steel bridges over Great Pee Dee River Swamp, U.S. Rte 1 N.E. of Cheraw, S.C. Docket No. 1335.270, F.A. Proj. No. F-321 (4), Chesterfield and Marlboro Counties;

S. C.—**Structures, Inc.**, Paris Station, Greenville, S. C., LB **$112,806**, (9 bidders), twin prestressed concrete overpasses (totalling 440 ft.) over Southern R.R. north of U.S. Rte 601, Int. Rte 26 N.E. of Orangeburg, S. C. Docket No. 38.490, F.A. Proj. I-IG-26-3 (13), Orangeburg Co. CD 10/9.

ALABAMA—State Highway Dpt., Montgomery, Zone 4,

A. E. Burgess Co., Inc., 3700 10 Ave., N. Birmingham, Ala., CA **$875,824**, 4-lane Green Springs Rd. 1.712 mi. S. to point ½ mi. S. of Shades Crest Rd., Jefferson Co. Bids Aug. 21, awarded Oct. 19. CD 9/25, under LB.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 10/21,

La.—**L. H. Bossier, Inc.**, Box 1870, Alexandria, La., LB **$591,365**, grading, drainage structures 13.535 mi. Glenmora-Woodworth Hy., Rte. LA-US 165.SP Nos. 14-05-07 & 14-06-15, Rapides Parish,

La.—**Philip R. Farnsworth & Co., Inc.**, Box 752, New Orleans, La., LB **$3,221,173**, grading, drainage structures, railroad overpass and interchange structures 1.44 mi. Pontchartrain Blvd., Interchange-Airline Hy., Rte. I-10. SP No. 740-00-38. FAP No. I-10-5(15) 234, Orleans Parish, CD 9/23,

BUILDINGS—LB & CA

▲ **Eugene Simpson & Bros.**, 300 Montgomery St., Alexandria, Va., CA **$1,041,342**, Edgar Allen Poe INTERMEDIATE SCHOOL, ANNANDALE, VA. Fairfax Co. Bd. Educ., Fairfax, Va. Bids Oct. 22. CD 10/27, under LB.

W. A. Sherman, McLean, Va., LB **$946,615**, (11 bidders), INTERMEDIATE SCHOOL NO. 8, off Lawyer's Rd., FAIRFAX, VA. Fairfax Co. Bd. Educ., Fairfax, Va. Pickett & Siess, 110 Gordon Rd., Falls Church, Va., archt. Bids Oct. 22. CD 5/11.

Southeastern Constr. Co., 301 W. 2nd St., Charlotte, N. C., CA **$816,456**, CHURCH SANCTUARY, CHARLOTTE, N. C., Myers Park Baptist Church, 1900 Queens Rd., Charlotte, N. C. CD 10/28.

▲ **Congaree Constr. Co.**, 3530 Colony Forest Dr., Columbia, S. C., CA Est. **$1,300,000**, SHOPPING CENTER, COLUMBIA, S. C. W. H. Monckton, c/o Walter A. Keenan & Co., Security Federal Bldg., Columbia, S. C. CD 10/22.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., LB **$933,000**, YMCA, GREENVILLE, S. C. YMCA, 105 E. Coffee St., Greenville, S. C. Bids Oct. 21. CD 9/23.

Lake City Bldg. & Supply, P. O. Box 446, Lake City, S. C., LB **$726,147**, 6 SCHOOLS, KINGSTREE, S. C. Williamsburg Co. Bd. Educ., Courthouse, Kingstree, S. C.

Mills & Jones, 400 23 St. N., St. Petersburg, Fla., LB **$827,000**, (14 bidders), Grand-Way STORE, 62 Ave. N. and 9 St. N., ST. PETERSBURG, FLA. Eastern Shopping Centers, Inc., Cross County Center, Yonkers, N. Y. D. E. Britt Assocs., 1766 Bay Rd., Miami Beach, Fla., consult. engrs. Bids Oct. 22, CD 10/15.

▲ **O. L. Olsen Co., Inc.**, 416 Pierce St., Houston, Tex., CA Approx. **$1,500,000**, GASOLINE PLANT and related facilities, near HOUMA, LA. Tidewater Oil Co., M. Esperson Bldg., Houston, Tex. CD 10/29.

▲ **John R. Fiser**, Walnoaks Rd., Knoxville, Tenn. Day Labor, **$1,500,000**, 220 RESIDENCES, KNOXVILLE, TENN.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Niles**—BA 11/24—City, City Hall, sewage treatment plant, $1,100,000; sanitary sewers, $1,500,000. Floyd G. Browne & Assocs., P. O. Box 510, Marion, engrs.

O. Shelby—BA 12/2—Town, Town Hall, water treatment plant, $700,000. Floyd G. Browne & Assocs., Box 510, Marion, engrs.

▲ **O., North Olmsted**—BA 12/3—City, City Hall, sewage treatment plant, $1,600,000. Floyd G. Browne & Assocs., P. O. Box 510, Marion, engrs.

BUILDINGS—BA

▲† **Ill., Danville** — HOSPITAL — BA 12/22—Veterans Admin., Munitions Bldg., Wash., D. C., Admission and Treatment Bldg. No. 98, Veterans Administration Hospital. CD 12/8.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, Bids opened 10/23,

Ill.—**C. R. Meyer & Sons**, 208 State St., Oshkosh, Wis., LB **$797,987**, (15 bidders), 2 bridges over Fox River and R. R. on FAI 80 northeast of Ottawa, LaSalle Co., CD 10/19; LB **$661,312**, 2 bridges over Sangamon River FAI 55 near Springfield, Sangamon Co., CD 10/16;

Ill.—**H. H. Mass Constr. Co.**, Main St., Algonquin, Ill., LB **$630,000**, (11 bidders), 2 bridges over Rock River and 2 bridges over East Channel of Rock River, Winnebago Co., CD 10/9.

WISCONSIN—State Hy. Comm., State Office Bldg., Madison,

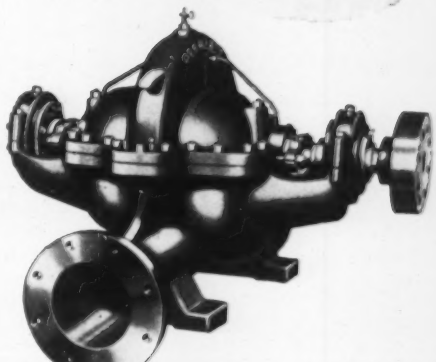
Rock Road Constr. Co., 453 S. Owen Dr., Madison 5, Wis., CA **$790,027**, subbase, base and conc. 4.022 mi. Williams Bay-Lake Geneva Rd., S. T. Hys. 36 and 50, Contr. 1, Proj. F 064-1(9), Walworth Co. Bids Sept. 29. CD 10/5, under LB.

(Continued on page 96)

today there stands a city—

Where once, because there was no water, this farm failed. Helping supply water to municipalities everywhere are Peerless Type A centrifugal pumps. These horizontal work horses of the general purpose pumping field combine all the features necessary to outstanding, dependable pump performance. Split case design provides easy maintenance and inspection without disturbing piping. Superior hydraulic characteristics provide a capacity range of up to 70,000 gpm and a head range to 300 ft. A Type A's overall design efficiency and quality construction endow it first with a measurably longer service life and second with job versatility that qualifies it for nearly every pumping requirement your system may call for.

Get the finest—get the Peerless Type A horizontal centrifugal pump.



PEERLESS PUMPS

WRITE FOR BULLETIN NO. B-1300

Putting Ideas to Work

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FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

Peerless Pump Division

Plants: LOS ANGELES 31, CALIFORNIA and INDIANAPOLIS 8, INDIANA

Offices: New York; Cleveland; Chicago; St. Louis; San Francisco; Atlanta; Plainview; Lubbock; Phoenix; Albuquerque; Los Angeles; Fresno. **Distributors in Principal Cities.** Consult your telephone directory.

Pittsburgh Fab-Form, available in lengths up to 28 feet, 3 inches with 5/8-inch corrugation, is handled easily on steel joists by one man at St. Regis Church and School in Trafford, Pa. Contractor H. Justin Brown & Son, Mt. Lebanon, Pa., reported it took four men just one day to lay 10,800 square feet of Fab-Form. Fab-Form was sold and engineered by W. N. Dambach, Inc., Pittsburgh, Pa.

New Fab-Form by Pittsburgh Steel Cuts Floor and Roof Slab Costs, Gives Greater Length and Width

Fab-Form, a brand new addition to Pittsburgh Steel Products' line of quality construction products, builds in savings of materials and erection time for concrete floor and roof slabs.

New Fab-Form—longest and widest corrugated, permanent steel form for slabs poured over joists—reduces the number of end and side laps through its 32-inch cover width and extra length.

In addition, Fab-Form has an exclusive new welding method that is literally a snap.

Fab-Form is fabricated:

- In standard lengths, plus other lengths up to 28 feet, 3 inches—twice as long as most others.
- In a cover width of 32 inches.
- With deepest corrugation — a full 5/8-inch — of any standard steel centering.
- Plain or Bonderized with an exclusive baked-on duPont red oxide primer that provides weather protection and serves as an excellent primer base for further painting of exposed underside. Fab-Form's special protective finish prevents water stain or "white rust."

Fab-Form's uniform strength comes from high-tensile (90,000 to 100,000 psi), 27 gage, cold rolled steel sheet.

- **Ideal for School**—One of the first construction jobs in which Fab-Form was used was the new St. Regis Church and School in Trafford, Pa. Architect for the job was Ermes Brunettini, AIA, Verona, Pa. More than 33,000 square feet of Fab-Form supports three-inch concrete floor and roof slabs set on steel joists.

Thomas A. Laboon, job superintendent for H. Justin Brown & Son, general contractors from Mt. Lebanon, Pa., said that the deeper corrugations in Fab-Form helped make a stronger slab. Pittsburgh Steel's six-inch square mesh made of No. 6 gage wire was used for reinforcing.

Fab-Form's speed of installation also impressed Mr. Laboon. He said that it took four men just one day to lay 10,800 square feet of Fab-Form on roof joists. After sections were laid, welders using the unique Fab-Form Welding Washer Stick made plug welds to every other joist.

- **Easy as A, B, C**—Welders found using the exclusive Fab-Form Welding Washer Stick unusually simple. Pittsburgh Steel developed the unique stick so that each welder bent up the end washer on the stick, made his plug weld and snapped off the washer—in just seconds. This eliminates fumbling in heavy gloves for individual washers. Next, mesh was installed and the slab was poured.

"Everything came out exactly right with no scrapped material," said Mr. Laboon in commenting on the economy of Fab-Form. "The side and end-lapping worked out exactly right.

"On top of that," he added, "you know that when Fab-Form is down you have a material that will take a beating from men tramping on it, buggies and even rough weather.

"Later, after the slab is poured,

Deepest corrugation, 5/8-inch, of all standard steel centering is available with Fab-Form. Job Superintendent Thomas A. Laboon, left, shown with Pittsburgh Steel Products Salesman C. W. Bainbridge Jr., said deep corrugation helped make a stronger slab.

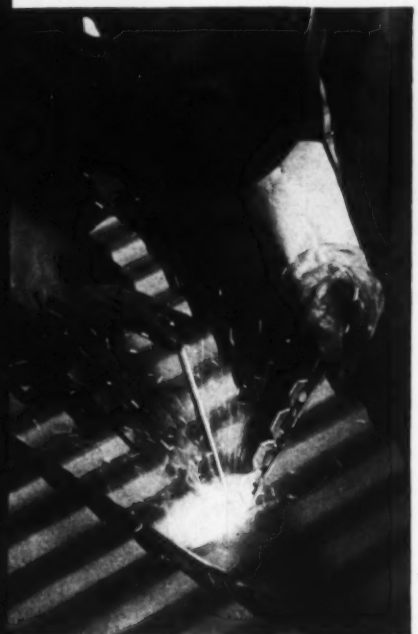
Rugged Fab-Form, longest and widest corrugated steel centering for concrete floor and roof slabs on the market, easily supports a three-inch roof slab. Fab-Form saves material and erection time.

you are confident that the same material will go a long way in helping provide sound construction."

Join the growing list of satisfied Fab-Form users. Your first application will convince you of Fab-Form's advantages . . . from Pittsburgh Steel Products Division, a leader in the construction products field for more than 30 years.

Write today for literature or, better yet, contact the nearest Pittsburgh Steel Products sales office listed here.

Pouring is no problem with Fab-Form. Here a buggy has rolled over Fab-Form without damaging the material. Six-inch square mesh made of No. 6 gage wire is from Pittsburgh Steel, too.



Exclusive Fab-Form Welding Washer Stick reduces installation time. After the end washer on the stick is bent up, the welder makes a plug weld and snaps off the washer. Then mesh is installed and slab is poured.

Fab-Form

Pittsburgh Steel Products

a division of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES

Atlanta	Cleveland	Detroit	Los Angeles	Pittsburgh
Chicago	Dayton	Houston	New York	Tulsa
			Philadelphia	Warren, Ohio

(Continued from page 92)

Bauer Constr. Co., 3411 W. Fond du Lac Ave., Milwaukee, Wis., CA **$982,080,** (8 bidders), general contract Texas Ave Water Intake Station, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Oct. 20. Awarded Oct. 23. CD 9/29.

BUILDINGS—LB & CA

Alden Homes, Inc., c/o Arthur Orlean, 1900 Euclid, Cleveland 15, O., Own Forces, **$820,000,** 48 RANCH HOMES, Sylvia and Pauldin Drives, BROOK PARK, O.

▲ **Melbourne Constr. Co.,** 5520 Cleveland Ave. N.W., Canton, O., CA Est. **$1,000,000,** INSTRUCTION AND ADMINISTRATION BLDGS., Catholic College, N. Canton-Maximo Rd., CANTON, O. Brothers of Christian Instruction, Alfred, Maine. Firestone & Motter, 1421 Cleveland Ave. N.W., Canton, O.

▲ **F. X. Minnigan,** 14 Bates St., Dayton 2, O., CA **$1,634,430,** est. $1,350,000, general contract YWCA remodeling, DAYTON, O. Young Women's Christian Assn., 141 W. Third St., Dayton, O. Bids Oct. 15. CD 9/4.

▲ **Paul Albert,** 7523 Wainstead Dr., Parma 29, O., Own Forces, **$1,220,000,** 61 RANCH HOMES, north of Pleasant Valley Rd., PARMA, O.

Erie City Iron Works, 1422 East Ave., Erie, Pa., CA **$849,770,** STEAM GENERATING UNIT for municipal light plant addn., PIQUA, O. City, City Hall, Piqua, O.

Eugene S. Babilla, Inc., 578 Broadway Ave., Gary, Ind., LB **$890,488,** (11 bidders), general contract, Norton Park ELEMENTARY SCHOOL, GARY, IND. School City of Gary, 10 Place and Virginia Ave., Gary, Ind. Bids Oct. 13. CD 9/21.

H. G. Christman Constr. Co., 850 Fellows St., South Bend, Ind., LB **$869,139,** general contract 1 story, bsmnt., brick, block HIGH SCHOOL addn., incl. 2 swimming pools and gymnasium, GOSHEN, IND. Goshen School Bldg. Corp., Goshen, Ind. Bids Sept. 21. CD 8/18.

Lee Constr. Co., Inc., 6334 N. California Ave., Chicago, Ill., LB **$866,433,** general contract MARY MAPES DODGE ELEMENTARY SCHOOL, 2651 W. Washington Blvd., CHICAGO, ILL. Bd Educ., 228 N. LaSalle St., Chicago 1, Ill. Bids Oct. 19. CD 9/23.

▲† **Kay-Cee Constr. Co.,** 8115 North Ridgeway Ave., Skokie, Ill., LB **$1,396,000,** (6 bidders), CANTEEN and LIBRARY BLDG. No. 136, incl. underground distr. sys. and heating controls, Veterans Administration Hospital, BATTLE CREEK, MICH. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 27. CD 9/11.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 13 Kansas
STREETS AND ROADS
November 13 Kansas, Minnesota

▲ **Minn., Bloomington (P. O. Minneapolis)**—BA 11/13—Village, Village Hall, 22,000 lin. ft. sanitary sewers, etc. $1,000,000. Plans deposit $100. Orr-Schelen, Inc., 1104 Currie Ave., Minneapolis, engr. CD 3/9.

▲† **Texas**—BA About 11/24—U. S. Eng., Box 1229, Galveston, Guadalupe River, channel to Victoria, Tivoli Branch to Main Line, Missouri Pacific R.R., Gulf Intracoastal Waterway, Calhoun and Victoria Counties, ENG-41-243-60-22. $1,000,000-$2,500,000. CD 9/30.

BUILDINGS—BA

Tex., Fort Worth—SCHOOL—BA 11/17—Fort Worth Ind. School Dist., 1300 Lancaster St., 1 story, 67,000 sq. ft. Wedgwood Junior High School, Wedgwood addn. $803,000. Plans deposit $25 for general, $15 for mechanical trades. Oline E. Boese & Assocs., 905 T & P Bldg., archts. CD 1/22.

▲ **Minn., Pine Bend**—SCHOOL—BA 11/24—Bd. Educ. Independent School Dist. No. 199, I. T. Simley High School. $1,300,000. Ellerbe & Co., 333 Sibley St., St. Paul, archts. Bids Oct. 21 rejected. CD 10/12.

▲ **Tex., Amarillo**—OFFICE—BA 11/24—The Reva Corp., c/o Jack C. Vaughn, c/o Wyatt C. Hedrick, archt.-engr., 904 Fort Worth Ave., Dallas, 10 story, bsmnt. office. $1,250,000. CD 10/22.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Capitol Approach, St. Paul.

W. D. Giertsen Co., 3501 Xenwood Ave. S., Minneapolis, Minn., CA **$3,181,493,** bridges, approaches on Sixth St., TH 94 over Great Northern Pacific and Chicago & Northwestern R.R. tracks in St. Paul, Bridges Nos. 6755 and 6756, Ramsey Co. Bids Oct. 16. CD 10/21, under LB.

Wilson & Tavrides, Inc., 9302 Ogden Ave., Brookfield, Ill., LB **$965,347,** (4 bidders), sewage treatment plant imprvs., AUSTIN, MINN. City, City Hall, Austin, Minn. Bids Oct. 14. CD 9/23.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre. Bids opened 10/22.

S. D.—**Pasco Constr. Co.,** 1707 S. 1st Ave., Sioux Falls, S. D., and **Art Schimkat Constr.,** Pierre, S. D., LB **$535,457,** (13 bidders), grade, subbase, etc. 12.516 mi. Proj. F-011-6(1), Harding Co.; LB **$796,906,** (10 bidders), grading, etc., 8.184 mi. Proj. I-90-9(2) 404, Minnehaha Co., LB **$529,027,** (13 bidders), grade, subbase, etc. 14.249 mi. Proj. S 1263(1) Stanley Co.;

S. D.—**W. E. Bartholow & Son Constr. Co.,** Huron, S. D., LB **$125,276,** (17 bidders), base course, bit. surf. 6.123 mi. Proj. S 6240(1), Beadle Co.;

S. D.—**J. H. Beckman Constr. Co.,** 3631 W. 14th St., Sioux Falls, S. D., LB **$141,329,** (13 bidders), base course, bit. surf. 5.46 mi. Proj. S 3981(3), Union Co. CD 10/14.

† **Peter Kiewit Sons Co.,** 2700 George Washington Blvd., Wichita, Kan., CA **$699,580,** est. $730,904, Scheds. 1, 3 and 4, earthwork, structures, incl. pipe siphon, for White Rock Exten. Canal, Station 307 plus 90.4 to end; and laterals and drains, Missouri River Basin Proj. Bostwick Div. south of Republic, Kan., Spec. DC 5227, NEBRASKA and KANSAS. Bureau Reclamation, Dpt. Interior, Superior, Neb. Bids Sept. 22. CD 9/29, under LB.

TEXAS—State Hy. Comn., Austin,

Collins Constr. Co. of Texas, 2821 E. 19th St., Austin, Tex., CA **$758,413,** flex. base, b. conc. 13.846 mi. Hy. US 277, Proj. S 213 (5), Coke Co. Bids Oct. 21. CD 10/26, under LB.

▲ **Industrial Brownhoist Co.,** 2284 W. Holcombe Blvd., Houston, Tex., LB **$723,523,** unloading tower, HOUSTON, TEX. Port Comn., Navigation Dist., Harris County Houston Ship Channel Navigation Dist., 1519 Capitol Ave., Houston, Tex. Bids Oct. 21. CD 10/13; **Pacific Coast Engineering Co.,** Oak and Clement Sts., Alameda, Calif., LB **$320,000,** loading tower (Houston, Tex.).

E. E. Co., Inc., Box 478, South Houston, Tex., LB **$733,046,** Elgin-Lockwood Streets Interchange Proj. (earthwork, concrete structures, bridging, utilities, pavt.), HOUSTON, TEX. City, City Hall, Houston, Tex. Turner & Collie, Inc., C & I Life Bldg., Houston, Tex., engrs. Bids Oct. 16. CD 9/15.

Natkin & Co., Box 13353, Walnut Hill Station, Dallas, Tex., CA **$502,423,** water sys. imprvs., incl. over 30,000 lin. ft. pipe laying, WICHITA FALLS, TEX. City, City Hall, Wichita Falls, Tex., Bids Oct. 12. CD 10/21, under LB.

BUILDINGS—LB & CA

A. P. Kasch & Sons, Box 1472, Big Spring, Tex., CA **$748,110,** (13 bidders), JUNIOR HIGH SCHOOL, PRIMARY SCHOOL, etc. ABERNATHY, TEX. Abernathy Ind. School Dist., Abernathy, Tex. Bids Oct. 22. CD 10/7.

▲† **Fisher Constr. Co.,** 4711 Greeley St., Houston, Tex., and **Diversified Builders, Inc.,** 6855 E. Rosecrans Blvd., Paramount, Calif., CA **$7,850,000,** 12 story, 521,071 sq. ft. FEDERAL COURTHOUSE and OFFICE, Rusk, Brazos, Capitol and Smith Sts., HOUSTON, TEX. General Services Admin., 1114 Commerce St., Dallas, Tex. Bids Sept. 10 CD 9/14, under LB.

W. S. Uhlhorn Constr. Co., Harlingen, Tex., CA **$963,800,** 100 DWELLING UNITS, Proj. Tx-11-3, LAREDO, TEX. Laredo Housing Auth., Laredo, Tex. Bids Oct. 21. CD 10/27, under LB.

▲ **Malibou Corp.,** 3255 Jasmine, Denver, Colo., Owner Builds, **$1,000,000,** two 1 story, three 2 story, 60,000 sq. ft., five 1 story Malibou MOTEL, 30 x 60 ft. swimming pool, 6160 Smith Rd., DENVER, COLO. CD 9/23.

▲† **H. A. Lott, Inc.,** P. O. Box 809, Los Alamos, N. M., LB $2,872,400, (3 bidders), Lots 1 and 2, CIVILIAN POWER REACTOR and ROVER HOT CELL FACILITIES. Inv. No. 291-60-3, LOS ALAMOS, N. M. Atomic Energy Comm., c/o Ch. Contracts Sec., Los Alamos, N. M. Bids Oct. 15. CD 9/22.

Robert E. McKee, Gen. Contr., Inc., P. O. Box 1706, Santa Fe, N. M., LB **$1,897,790,** (1 bidder), Lot 1, (Los Alamos, N. M.).

FAR WEST

HEAVY CONSTRUCTION—BA

† **California**—BA 11/18—U. S. Eng., 751 S. Figueroa St., Los Angeles, East Twin and Warm Creek Channel, CIVENG-04-353-60-7. $700,000. CD 10/1.

BUILDINGS—BA

Wash., Ellensburg—EDUCATION AND PSYCHOLOGY CLASSROOM—BA 11/19—C. J. Fenn, Jr., supervisor div. of eng. & archt., State Dpt. General Admin., Olympia, 2 story, 65 x 324 ft., rein.-con. education and psychology classroom, for Central Washington College of Education. $900,000. Plans deposit $50. Culler, Gale, Martell & Norrie, Realty Bldg., Spokane, archts. CD 11/13/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Morrison-Knudsen Co.,** 319 Broadway, Boise, Idaho, CA **$1,770,774,** 116 ft. high concrete arch dam, Metvetcha River; 98x31 ft. rein.-con. powerhouse, 2 generators, 84 in. steel penstock 400 ft. long, Blue Lake Hydro Proj., SITKA, ALASKA. City, City Hall, Sitka, Alaska. Bids Sept. 1. CD 9/4, under LB.

▲ **WASHINGTON**—State Hy. Comm., Dpt. Hys., Olympia. Bids opened 10/27.

Lige Dickson Co., 3315 South Pine St., Tacoma, Wash., LB **$1,387,124,** (12 bidders), imprv. State Hy. 1, King Co. CD 10/12.

† **J. W. Briggs,** Reading, Calif., CA **$726,016,** (11 bidders), paving 20 mi. Tioga Rd., Yosemite National Park, CALIFORNIA. National Park Service, Dpt. Interior, 19th and C Sts. N.W., Wash., D. C. CD 9/21.

BUILDINGS—LB & CA

† **Arrington Constr. Co., Inc.,** Idaho Falls, Idaho, LB $721,275, (4 bidders), BOILING WATER REACTOR NO. 5, (Borax V) facility at National Reactor Testing Station, Inv. C-810-59, ARCO, IDAHO, Atomic Energy Comm., Idaho Operations Office, Idaho Falls, Idaho. CD 7/29.

Max Rosenloff, P. O. Box 396, Orem, Utah, LB **$609,990,** general contract, HIGH SCHOOL, RICHFIELD, UTAH, Sevier Bd. Educ., 188 W. Denter St., Richfield, Utah. Bids Oct. 15. CD 9/28.

▲ **Paulsen Constr. Co.,** 1425 Jefferson St., Salt Lake City, Utah, LB **$1,153,114,** general contract, Granite Park JUNIOR HIGH SCHOOL, SALT LAKE CITY, UTAH. Granite School Dist., 3212 S. State St., Salt Lake City, Utah. Bids Oct. 20. CD 9/28.

J. I. Barnes Constr. Co., Central Bldg., Seattle 4, Wash., CA **$716,460,** (9 bidders), general contract six totaling 79,700 sq. ft., masonry, rein.-con. bldgs. for Kenmore JUNIOR HIGH SCHOOL, 20323 66 Ave. N.E., BOTHELL, WASH. Northshore School Dist. 417, Bothell, Wash. Bids Oct. 9. CD 10/13, under LB.

Singleton Constr. Co., P. O. Box 774, Redding, Calif., LB **$505,467,** (8 bidders), CHRONIC WING addn., Shasta County Hospital, REDDING, CALIF. Bd. Supervs. Shasta Co., Courthouse, Redding, Calif. Bids Oct. 22. CD 10/6.

Pacific Coast Builders, 1 South Park St., San Francisco, Calif., LB **$867,750,** Base Bid, Woodside HIGH SCHOOL addns., Woodside, REDWOOD CITY, CALIF. Sequoia Union High School Dist., 480 James St., Redwood City, Calif. Bids Oct. 20. CD 9/25.

Craig Development Corp., Box 486, Tustin, Calif., Owner Builds, **$894,400,** 44 DWELLINGS, Tract 2593, TUSTIN, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 2 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Canadian Bridge Div. of Dominion Steel & Coal Corp.,** Ltd., Windsor, Ont., CA **$3,174,948,** superstructure and deck, Cornwall North Channel Bridge, International Rapids Section, St. Lawrence Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Sept. 29. CD 10/5, under LB.

J. Lamontagne Ltd., 867 Decarie Blvd., Montreal, Que., LB $513,000 (13 bidders), transit shed, Section No. 50, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont.

▲ **Omega Constr. Co. Ltd.,** 655 Cote des Neiges Rd., Montreal, Que., CA **$1,144,000,** excavation, foundation, waterproofing and plumbing works for fingers, tunnels and aeroquay for Air Terminal Bldg., Montreal Airport, Dorval MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Oct. 1. Awarded Oct. 23. CD 10/8, under LB.

BUILDINGS—LB & CA

▲ **W. H. Cooper Constr. Co. Ltd.,** 21 Hunter St. E., Hamilton, Ont., CA Est. **$1,300,000,** 4 story, L-shaped WOMENS RESIDENCE, HAMILTON, ONT. McMaster University Hamilton, Ont. Bids Sept. 29, awarded Oct. 23. CD 9/17.

Economy Home Builders Ltd., 1325 Grand Marais St., Windsor, Ont., CA **$727,649,** 91 unit ROW HOUSING, on and south of Roxborough Park survey, incl. baseboard radiation, HAMILTON, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W. and Ontario Dpt. Planning & Development, Parliament Bldgs., Toronto, Ont. Bids Sept. 17, awarded Oct. 19. CD 9/22, under LB.

▲ **J. A. Jones Constr. Co. (Canada) Ltd.,** c/o J. L. Hartman Jr., Monterrey Hotel, Sarnia, Ont., LB $2,215,000 (8 bidders), 3 story, 75,000 sq. ft. CITY-COUNTY BLDG., Christina St., SARNIA, ONT. City, City Hall, Sarnia, Ont. Bids Oct. 21. CD 10/12.

S. Minz, 3456 Bathurst St., Toronto, Ont., Owner Builds, **$608,000,** 6 story, masonry, 76 suite APARTMENT, Lot 6, Mile Post Place, Leaside, TORONTO, ONT. John Daniels, 166 Wilson Ave., Toronto, Ont., archt.

Woodall Constr. Ltd., 1711 Walker Rd., Windsor, Ont., CA Est. **$924,000,** HIGH SCHOOL, Liberty St., Sandwich West, WINDSOR, ONT. Windsor Suburban High School Bd., Windsor, Ont. Bids Oct. 7, awarded Oct. 19. CD 10/5.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲† **PANAMA**—Bureau P. Rds., Office Minister P. Wks., Panama City,

Oman, Farnsworth & Wright, 625 Madison Ave., New York, N. Y., U. S. A., CA **$1,381,920,** Panama Project, 15-S Inter-American Hy., from Penonome to Aguadulce. Bids Oct. 7. CD 10/13, under LB.

BUILDINGS—LB & CA

▲ **E. Casado Sastre,** Esmeralda 1180, Buenos Aires, Argentina, CA Est. $2,200,000, design and construct 20 story BANK, BUENOS AIRES, ARGENTINA. Banco de Avellaneda, San Martin 70, Buenos Aires, Argentina.

▲ **Benito Roggio e Hijos S. A.,** Las Heras 402, Buenos Aires, Argentina, CA Est. $3,700,000, design and construct 59,500 sq. yd. OFFICE with CINEMA, BUENOS AIRES, ARGENTINA. Cinematografica Mediterranea S. A., Cangallo 935, Buenos Aires, Argentina.

(Proposed Advertisements see p. 105 to 108)

LW SPEEDPULL®

"Plenty of power"

R. M. (Dick) Sumsion, *owner*

"Very fast on the haul"

Glenn Lowder, *foreman*

These experienced earthmoving men like to talk about their new LW Speedpulls . . . *and there's a good reason for their enthusiasm.* The J. M. Sumsion & Sons firm put two of these 276-hp, 20-yd heaped-capacity units to work on one of its recent contracts . . . rebuilding 5 miles of U.S. 160, north of Monticello, Utah . . . and the production job turned in by the 37.7-mph Speedpulls was *remarkable.*

Working in ripped sandstone . . . material weighing up to 2,730 lbs per yard . . . the Speedpulls picked up good 14-yard payloads in an average of one minute. Cycles a mile long were completed in about 4 minutes. Together, the two units averaged 335 yards per 50-minute hour.

Fast, level ride and a lot more

You'll be hearing much about the LW six-wheel Speedpull in the future! Fully proven as a BIG producer, its advanced features include:

HYDRAIR* SUSPENSION: absorbs all shocks, levels the ride for faster, safer hauls; eliminates need for front axle, prevents troublesome axle "dozing" action . . . HIGH POWER-TO-WEIGHT RATIO: only 336.9 pounds of total loaded weight per horsepower, best in its class . . . FULLPAK® SCRAPER: lower, wider for better boil, fewer voids, bigger payloads . . . POWER-TRANSFER DIFFERENTIAL: lets 'Pulls* operate in soft going that stops other scrapers . . . ELECTRIC CONTROLS: instant-response, pinpoint accuracy control, easy-to-operate, easy-to-maintain . . . and BIGGEST BRAKES IN THE INDUSTRY: 3,764 square inches of brake surface for more safety.

Ask for complete information on the new LeTourneau-Westinghouse C Speedpull. See how this fast 20-yd scraper can help cut costs on your long-haul jobs.

One of two LW Speedpulls owned by J. M. Sumsion & Sons, Springfield, Utah, gets big payload of ripped sandstone. These 20-yd six-wheel earthmovers, together with two 16-yd C Tournapulls®, moved 136,000 yd of sand and sandstone to widen U.S. Highway 160 to 33 ft, and reduce grades to a 4% maximum. *(Note: if you anticipate long hauls in your future work, investigate LW Speedpulls now . . . for lower net-cost earthmoving.)*

*Trademark CSP-2181-DCJ-1

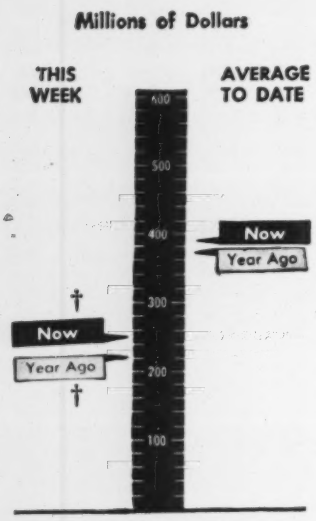
LW **LeTOURNEAU-WESTINGHOUSE COMPANY,** PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

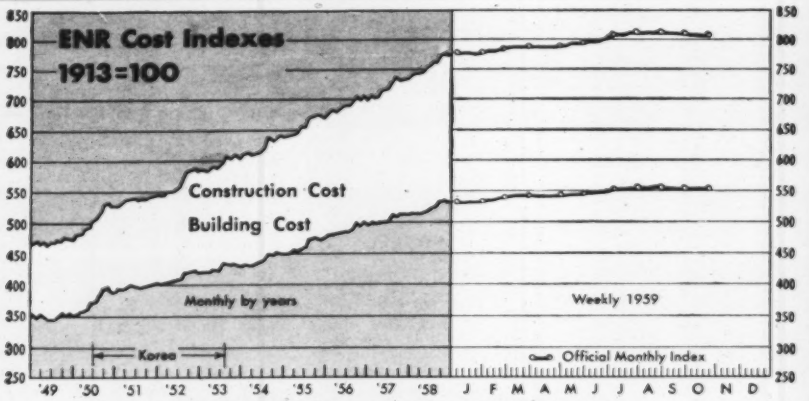
	†This Week	Cum. 45 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr.	$251.9	$17,608.8	+ 4
By Ownership			
PRIVATE	104.3	8,832.9	+30
PUBLIC	147.6	8,775.9	−13
State & Municipal	120.9	6,383.1	−15
Federal	26.7	2,392.8	− 8
By Type of Work			
PUBLIC			
Waterworks	7.5	341.0	+26
Sewerage	11.1	561.9	+ 6
Bridges*	10.3	625.3	− 2
Highways	48.8	2,554.3	−20
Earthworks, Dams & Waterways	13.8	771.6	−18
Buildings:			
Excl. Housing	41.3	2,245.8	− 3
Housing	5.6	534.9	−46
Unclassified	9.2	1,151.7	− 8
PRIVATE			
Buildings:			
Mass Housing	51.3	4,001.0	+22
Commercial	23.7	1,862.6	+16
Industrial	26.6	2,517.2	+62
Unclassified	2.7	441.5	+21

*Includes private bridges †4 day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of Oct. 29	Cum. 44 wks 1959	Chge '58-'59
	millions		%
Corporate Securities	$ 65.0	$3,286.3	−26
State and Municipal:			
All Except Housing	56.9	5,023.1	− 6
Housing	32.3	107.5	− 6
Federal Loans	3.4	124.9	−26
Federal Aid		3,343.4	+29
Total Nonfederal	$157.6	$11,885.2	− 6
Federal Appropriations:			
Projects in U. S.		$ 3,564.1	−16
Outside U. S.		22.4	−51
Total New Capital	$157.6	$15,471.7	− 9



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 29 1959	% Change from Oct. 1 1959	% Change from Oct. 30 1958
Construction Cost	809.78*	−0.20	+4.61
Building Cost	554.19*	−0.22	+3.59

* Official Monthly Index for November, 1959.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

WAGE RATES, 20-cities' average

	Nov. 1959	% Change from Oct. 1959	% Change from Nov. 1958
Common	$2.624	0	+5.9
Skilled (average 3 trades)	3.931	+0.3	+4.7
Bricklayers	4.165	0	+4.1
Structural Ironworkers	3.658	0	+4.8
Carpenters	3.969	0	+5.3
Equipment operators (average three types)	3.559	+0.4	+5.0

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	122.68	−1.4	+5.8
Lumber, 2x4 Pine, per M fbm	108.96	−1.2	+6.0
Cement, bulk, per bbl	3.94	−0.3	−0.4
Sand, per ton	2.467	0	−3.3
Ready-mixed concrete, per cu yd	14.112	+0.3	+2.0
Gypsum sheathing, ½"x2'x8', per Msf*	63.487	+0.3	+1.0
Fiber board sheathing, ½" sq. ed., per Msf*	73.512	+0.4	+0.3
Mineral wool insulation, 3' batts, per Msf*	68.38	0	−3.0
Crushed stone, 1½", per ton, CL	2.694	0	−5.4
Concrete blocks, sand/gravel, 8"x8"x16", each*	.250	0	+9.2

	Oct. 1959	Sept. 1959	Oct. 1958
Brick, common per M	39.618	0	+5.8
Lime, hydrated finishing, per ton, CL	39.302	+0.5	−1.5
Structural clay tile, 3x12x12", per M, 2,000 up*	187.002	+1.3	+5.9
Vitrified clay sewer pipe, std 12", per ft	1.367	0	+3.7
Concrete sewer pipe, 12", per ft	1.339	+2.4	+3.6

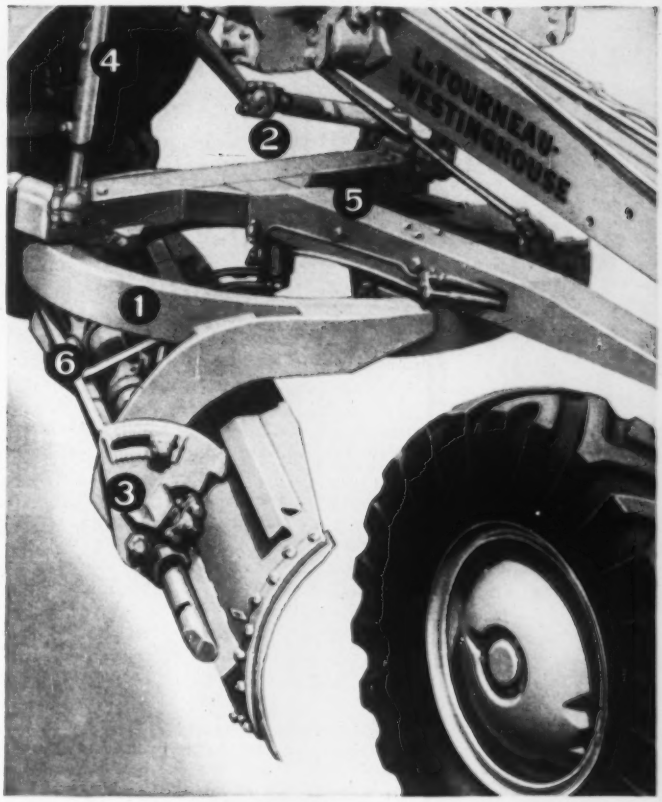
* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
Nov	774.12	162.28	534.96	152.07	384	111
Dec	773.81	162.22	534.79	152.02	466	435
1958 Average	759.16	159.15	524.68	149.15	531	153
1959						
Jan	778.28	163.15	536.23	152.43	460	133
Feb	778.75	163.25	537.25	152.72	472	136
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84	671	194
Aug	811.15	170.04	554.31	157.60	509	147
Sept	812.56	170.33	555.88	158.01	545	158
Oct	811.40	170.09	555.40	157.88	415	120
Nov	809.78	169.75	554.19	157.53	...	...

LW graders give you **positive blade control** for

...fast movement, lasting accuracy, long life

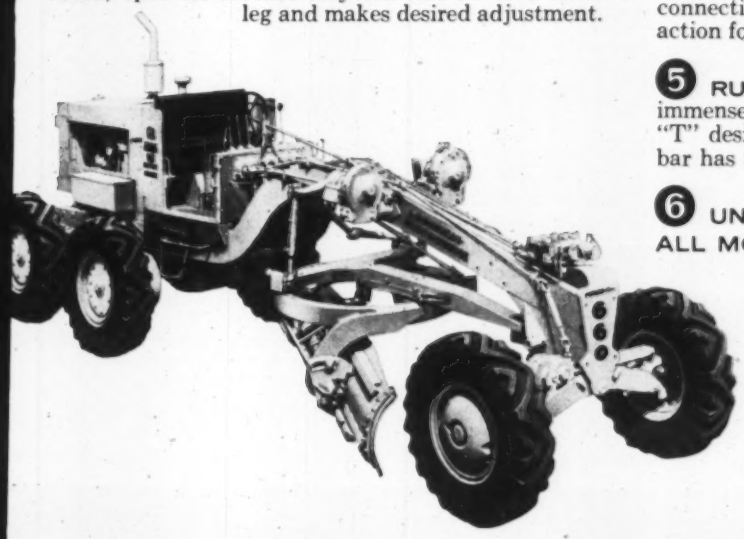


The "working end" of your grader is the blade and the circle assembly that controls it. With LeTourneau-Westinghouse graders, you're set up with a system that assures you *fast* blade movement with *positive* control. Result: Your operator grades more accurately, cuts deeper, pushes more dirt faster than any similar unit. Here's why:

1 BIG 63" CIRCLE...none bigger in the industry... all-welded and precision-machined, top, bottom, and inside, turns smoothly within adjustable guides. Teeth are protected from abrasive materials.

2 ENCLOSED GEAR-DRIVEN LATERAL SHIFT... free from lost motion and vibration common with open-rack types, and provides rigid support to blade in all positions.

3 QUICK, EASY MOLDBOARD TILT-ADJUSTMENT...to change pitch of moldboard, operator loosens only one nut on each circle leg and makes desired adjustment.



4 WIDE-SPACED LIFT-LINKS...go "straight down" for stable blade control... strong, telescopic, they extend or retract easily, have wear-compensating shim adjustments, and enclosed ball-and-socket connections. Short, stocky lift-arms avoid springing action for greater rigidity.

5 RUGGED T-SHAPED DRAWBAR...offers immense strength for circle support and blade pull. "T" design permits excellent blade visibility. Drawbar has 3 adjustable circle-wearing plates.

6 UNIVERSAL MOUNTING FITS ALL MOLDBOARDS...bracket, slide-shift, or power-shift moldboards can be interchanged on the *same* circle and legs.

Positive blade control is just one of the many profit-building features on the new, better-than-ever LW graders. Come in and get the complete facts. 7 models 67 to 190 hp.

G-2157-G-1

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

What's Behind U.S. Aid Changes?

- **The "Buy American" idea is gaining a much stronger hold in this country's foreign economic policy.**
- **The reason: Our imports are running well ahead of our exports.**
- **One result: Some of that foreign aid money is heading "home."**

A basic shift in the emphasis of U. S. foreign economic policy is under way in Washington. It is bound to have a long-term effect upon the overseas business of the construction industry.

The shift reflects the profound and perhaps permanent change in the international economic position of the U. S. that has taken place in the past few years. From being the world's greatest creditor nation the U. S. has become its leading trade debtor.

Last year the U. S. paid out to foreign countries $3.4 billion, in gold and dollars, more than it received. The deficit will be $4 billion or more this year. At that rate foreign claims upon the U. S. soon would exceed U. S. gold reserves and the stability of the dollar would be threatened.

The turnabout reflects the recovery of Europe and Japan, which now are competing so successfully both here and in third markets that the U. S. no longer is earning through trade the whopping surpluses needed to cover foreign military spending, foreign aid, and private investment.

The Administration now is acting on a broad front trying to reduce future balance of payments deficits. The main policy changes in the works are:

Future loans of the Development Loan Fund will be tied to purchases of American goods wherever possible. In the past development loan funds could be spent anywhere in the world and nearly half of them have been used to buy foreign goods.

This fund is the main channel for U. S. government economic aid to neutral underdeveloped areas.

• **A similar policy may be adopted with respect to grants and loans by the International Cooperation Administration to U. S. military allies** in support of military programs, although the State Department is resisting this.

• **An attempt will be made to trim U. S. military expenditures abroad** and to shift some of the cost of U. S. foreign bases and troops to allied governments.

• **Washington is trying to get other capitals to scrap remaining discriminatory restrictions on imports of U. S. goods.**

Secretary of the Treasury Robert Anderson, the new strong man of the Cabinet, is leading the drive to cut U. S. government expenditures abroad and to push U. S. exports. There is no argument over the need for the latter. Clearly, discrimination against dollar goods makes no sense now that the major world currencies are freely convertible into dollars.

But the Secretary is running into sharp opposition to his other policy moves. The State Department assented reluctantly to the decision to tie some loan fund lending in the future to purchases in the U. S. but is against extending this policy to aid military allies, and has grave doubts that military expenditures abroad can be cut significantly without cutting military strength.

Last week, Sen. William Fulbright (D., Ark.), chairman of the powerful Senate Foreign Relations Committee, attacked the policy of tying DLF loans to dollar goods on the grounds that it contradicted long-standing U. S. policy of encouraging the maximum competition in international trade, and that it risked slowing down already inadequate economic growth of underdeveloped countries.

Opponents of Secretary Anderson's policies make these arguments: Attaching strings to foreign aid spending won't have much effect on the U. S. balance of payments for years to come, if ever. But it will encourage protectionism abroad and give foreign governments an excuse for subsidizing their exports. In the long run this may hurt the U. S. trade balance more than it helps it.

At the same time, underdeveloped countries will be getting less real value from U. S. aid if they are not permitted to buy in the cheapest markets, thus increasing over-all needs for aid. As for trimming military spending, opponents say this would mean cutting military strength in practice since allied governments are unlikely to agree to take over any significant part of U. S. costs.

Supporters of the new policy moves have some telling rebuttals. They point to the hard fact that the U. S. balance of payments deficit cannot be permitted to continue at present levels. European countries, which have picked up the bulk of the dollars the U. S. has dropped on its international transactions, must be warned by deeds, not words, that they must help right the U. S. balance of payments—by using more U. S. goods. Otherwise, there is no doubt that Mr. Anderson has the political strength with the President, and almost certainly in Congress too, to force policy a long way in the direction he advocates.

The practical question thus becomes what the effect of the new policies is apt to be upon U. S. exports and the balance of payments. This is of particular importance to construction men in view of the large sums spent for construction of various kinds under U. S. aid programs.

It's too early to predict the impact of the coming policy shifts with any certainty, but some general conclusions are possible.

Tying U. S. aid to dollar purchases won't help the balance of payments or U. S. exports very much or very soon. Officials estimate that the maximum feasible tying of DLF and ICA spending to dollar goods would mean at most between $250 million and $500 million a year worth of business that otherwise might go to Europe and Japan. This is small potatoes alongside the whopping U. S. payments deficit.

And the effects on the balance probably wouldn't show up for at least two years due to the lag between approving loans and disbursing them. The net gain to U. S. exporters might be further cut if recipient countries used these aid funds to buy things here that they would have bought through commercial channels anyway.

There will be strong pressure on the Administration, of course, to convert the aid-with-strings policy into a straight subsidy policy for noncompetitive U. S. exports.

If the Administration sticks to its guns, the chances are that the U. S.

C Rear-Dump makes clean dump on North Umpqua Highway project near Dry Creek, Ore. The owner, C. H. Strong Engineering & Construction Company of Eugene, used two of the 22-ton haulers in moving 236,000 yards of material, 40% of it shot-blasted rock. "Operating these machines is really easy," reports Superintendent Bob DeCamp.

90° turn ability

gets more rock moved...faster

When you're doing rock work, your spread can become an obstacle course for the haulers that work on it . . . with narrow haul-roads, high vertical banks, crowded spotting areas, heavy haul traffic. If your job sites are like that . . . and your records show unusually high haul costs . . . get acquainted with the LeTourneau-Westinghouse line of Tournapull® Rear-Dumps. Their unusual turn ability *pays off*.

These heavy-duty haulers, with electric-powered pivot between prime-mover and body, turn at the touch of a switch. "Work" is done by a powerful, vertically-mounted electric motor turning a large ring gear. It turns the prime-mover a full 90° right or left of the bowl. Hauler turns in less than its own length.

Turn without slowdown

Rear-Dump operator can make U-turns on narrow haul roads without sharp speed reductions. He can turn 90° when spotting to load or dump.

Result: fast work cycles, more tons moved per hour, greater profit for you.

Let your distributor give you the complete story on LW Rear-Dumps, available in 3 sizes: 35, 22, and 11 tons. And . . . *this is important* . . . these hauler trailing-units are interchangeable with your present LW Tournapull scrapers.

CR-2102-DCJ-1

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

construction industry will not benefit much from the policy shift. The U.S. share in construction financed by the World Bank, which follows a strict international competitive bidding policy, has been dropping steadily in recent years.

If the Administration insists that aid funds be spent only for U.S. goods and services, that are competitively priced, the construction industry will get no better—or worse—break than it is getting now.

When it comes to trimming or shifting the burden of military expenditures, if this proves possible, the construction industry will not be much affected. True, the U.S. government in fiscal 1959 paid some $350 million to foreign construction firms for military construction abroad. But whether this is paid for by Washington or by a foreign government would make no direct difference to U.S. construction firms.

It's hard to say what the easing of foreign countries' discriminatory restrictions on imports of dollar goods would mean in practical terms.

Some types of U.S. construction equipment currently are discriminated against by some countries. But if discrimination were ended, it is questionable to what extent U.S. exporters would succeed in hurdling the remaining tariff barriers in competition with their European rivals.

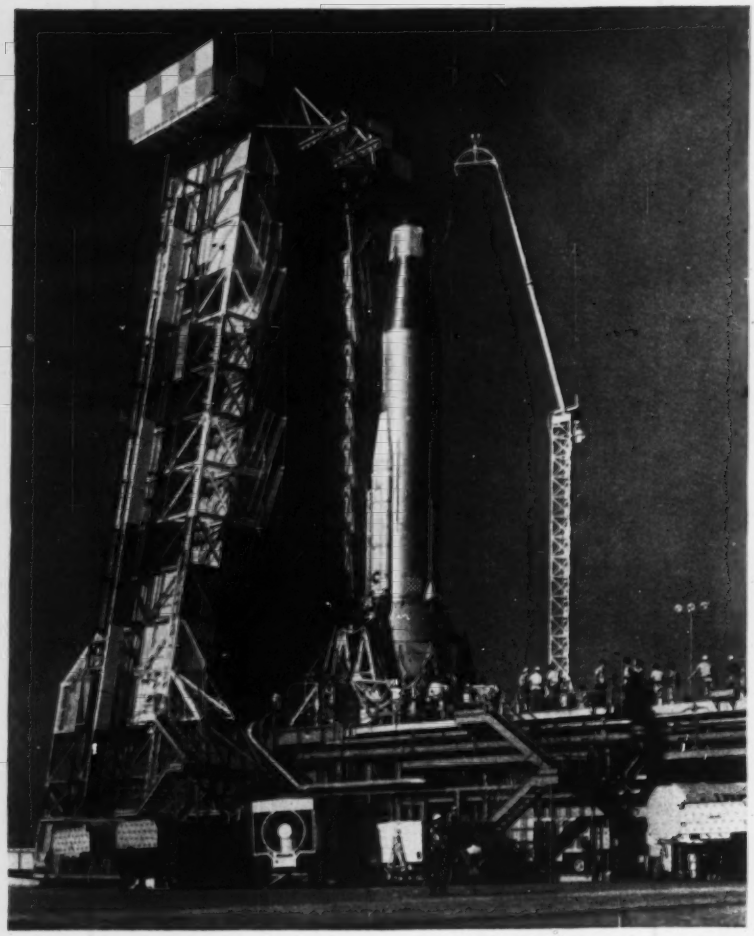
Business in Brief . . .

• **License law tightening**—Delaware Chapter of Associated General Contractors plans a drive aimed at tightening existing contractor license laws. The chapter wants legislation that would enable the group to assist the state tax department in determining qualification of license applicants.

• **Willing to buy construction**—Santa Clara voters last week approved $20.7 million worth of capital improvement bonds. Major projects include: street improvements, $5.7 million; sanitary sewers, $5.1 million; expansion of city-owned water system, $1.6 million; storm sewers, $1.4 million.

• **Airport lighting**—Airport designers and builders can get the new revision of "Approved Airport Lighting Equipment" from the Federal Aviation Agency, Washington, D. C. The booklet lists specific items of airport lighting that have been tested and approved for federal-aid airport projects.

(B&F continued p. 104)



What's Ahead for Tomorrow!

Science, engineering and construction continue to forge new eras. The contractor and his surety are the anchor men on this team, shouldering the responsibility of bringing these new projects into reality.

THE FIDELITY AND CASUALTY COMPANY OF NEW YORK provides the know-how in bond service and insurance protection that affords confidence to contractors undertaking tomorrow's projects.

The Fidelity and Casualty Company of New York

"Writing Bonds Since 1876"

a member company of America Fore Loyalty Group

Make a "spec check"...

See how Haulpak® ...cuts haul costs

LW engineers "threw away the book" when they designed the new Haulpak off-road hauler... for your benefit. The results are advantages that help you move *more* tonnage, *faster*, at *lower* net cost per ton.

Check Haulpak specifications. You'll want "spec sheets" in your files anyway, and your LW Distributor can supply you copies. Then, with basic Haulpak facts handy, compare them to other off-road haulers.

WHAT YOU WILL FIND WHEN YOU COMPARE HAULPAK:
(Competitive hauler specifications are "averaged out" for simplicity purposes... but Haulpak superiority is just as clear over any single machine.)

WHAT TO COMPARE	Off-road Haulers 20-30-ton class		Off-road Haulers 30-40-ton class		HOW YOU BENEFIT
	Average*	Haulpak LW 27	Average*	Haulpak LW 32	
Length Wheelbase Turn Diameter	26'7" 14'4" 64'3"	23'10" 10'10" 44'6"	31'5" 16'7" 77'6"	23'10" 10'10" 44'6"	HAULPAK is shorter. You maneuver faster, quicker and in less space.
Top Speed (in mph)	30.7	35.4	25.2	38.8	HAULPAK is faster, for more cycles per hour, more tonnage per shift.
Empty Weight (in lb)	49,300	43,020	73,400	44,950	HAULPAK is lighter, for more payload weight, less "dead" weight.
Ground Clearance Front Axle Rear Axle	 16" 16"	 25" 20"	 17¼" 18½"	 25" 20"	HAULPAK has higher clearance, to minimize troublesome "dozing" action.
Brake Surface (sq inches)	1511	4680	1834	5148	HAULPAK has bigger brakes, for greater safety, more steady use of high speeds.

(*Based on specifications available at time of printing)

and here are some of the design features that make these HAULPAK advantages possible...

Hydrair* suspension...eliminates springs...permits higher clearance, shorter turns

Cushions against loading and travel shock, cuts maintenance costs. Eliminates front axle, compensates for off-center load. COMPARE IT!

"V"-shaped body...lets Haulpak outcarry trucks that are longer, higher, heavier

Bonus yardage rides in V-bottom. Slope helps fill all corners. "V" lowers center of gravity for better stability, traction. COMPARE IT!

Box-beam frame...3 times stronger, ⅓ lighter, carries 30% more payload weight

Floor and all wear-surfaces made of 100,000 psi steel, yet weighs 33% less than comparable bodies. Haulpak hauls 30% more than its weight. COMPARE IT!

*Trademark HP-2193-DC-1

PLUS: MINIMUM MAINTENANCE (entire lube-check, needed only at 500-hr intervals, consists of just 4 easy-to-reach grease fittings)... POWER-TRANSFER DIFFERENTIAL (famed Tournapull® feature which automatically transfers power to wheel on best footing when going is rough)... POWER-MISER FAN (cools with 20 to 25 less hp drain)... 100% RUBBER-MOUNTED BODY (absorbs impact and shock of loading)... FOUR SEPARATE BRAKING SYSTEMS (for fast stops with complete safety)... POSITIVE POWER STEER (for faster turning, easier handling)... SIMPLE SIX-GEAR FINAL DRIVE (compared to 12 or more usually standard)... BIG, ROOMY CAB (has many work-efficiency features).

Available in 22, 27, and 32-ton capacities

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Construction Awards Take a Dive

Heavy construction contract awards in October were the lowest for the month since 1954. Volume also hit bottom for 1959 on a weekly average basis.

October awards of $1.49 billion brought the 10-month cumulative total to $17.4 billion. However, that's 4% above 1958's same period.

Hitting hard at October's new business, beside usual seasonal influences, were uncertainty about steel supplies, tighter credit terms and cutbacks resulting from a shortage of federal-aid road funds.

Net result was a 22% drop from September contract award volume and an 8% drop from October 1958.

Private contract awards again topped public volume in October—$794 million against $699 million. But private jobs fell 34% behind September, while public works dropped only 3% below September.

Biggest slump came in industrial building, where the steel strike is apparently having its greatest impact. Volume in the first 10 months, however, is 62% ahead of 1958, with $3.9 billion in awards. And, the 10-month industrial total tops every full year except the all-time record of 1956.

Mass housing awards of $386 million are 25% below September on a weekly average basis, but the total is 36% above a year ago. Despite an extremely tight mortgage market, homebuilders in October were optimistic. In that month, designers' desks held the biggest dollar value of housing in the planning stage since January 1957.

The $3.9 billion worth of private housing contracts awarded in the first 10 months is greater than each of the two preceding full years and tops comparable months of 1958 by 22%.

Commercial building dropped 11% in October to $141 million, but is still 2% ahead of one year ago. In 10 months, this category has awards of $1.8 billion, 16% more than a year ago and above every year except 1956.

In public construction, emphasis is on highways. This sector of the market is 20% behind the year-ago record, with awards of $2.5 billion for the first 10 months. The October total of $194 million is off 11% from September's weekly average, and 51% short of one year ago.

Bridge contracts are also lagging, with the first 10 months now 1% behind a year ago. Not much improvement in highways and bridges is anticipated until after the first of 1960. Then the potential monthly rate of federal-aid highway and bridge contracts should double the current low volume.

Public buildings (other than housing) amounts to $2.2 billion so far this year, only 2% less than the year-ago record.

Only federal construction bucked the October downtrend. Awards of $173 million were up 21% from September.

Cost Indexes Down This Month

Declining lumber prices pull ENR Cost Indexes downward for the second straight month. ENR's 20-Cities Construction Cost Index for November drops to 809.8—down .34% from a record 812.6 in September. The ENR Building Cost Index for November is at 554.2—.32% below the September peak of 555.9.

Both indexes, however, are higher than last November. The Construction Cost Index is 4.6% above a year ago; the Building Cost Index is up 3.6%. Both indexes are based on 1913 = 100.

Lumber prices, sliding since mid-August, reflect a drop in housing. In lumber-producing Seattle, three October price cuts contributed to the drop. Another price cut comes from railroads, which are cutting freight rates on bulk cement to compete with truckers. In Atlanta, November prices for bulk cement are lower following a 15-cent-per-barrel reduction in freight rates there.

Engineering Construction Contracts for October

Five Weeks—Thousands of Dollars (000 Omitted)

	October, 1959								Ten Months			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total Continental U. S.	% Change Oct. '58 to '59	Continental U. S. Cumulative 1959	Continental U. S. Cumulative 1958	% Change '58 to '59	Canada Oct. 1959
Public Works, Total	39,948	107,740	164,943	118,318	188,456	79,914	699,319	−31	8,628,247	9,963,369	−13	81,006
Waterworks	349	984	5,085	6,946	4,626	3,353	21,343	+ 1	333,658	267,310	+25	1,444
Sewerage	3,072	12,423	7,108	16,299	5,642	8,294	52,838	− 4	550,690	521,777	+ 6	4,485
Bridges	2,341	4,932	6,336	4,403	10,745	3,813	32,570	−57	604,389	609,038	− 1	8,211
Earthwork, waterways	359	10,626	4,560	8,366	21,234	11,589	56,734	−48	757,724	932,975	−19	5,069
Streets and roads	19,310	12,165	54,392	41,956	54,921	11,710	194,454	−51	2,505,301	3,131,379	−20	13,946
Buildings: Residential	503	13,909	14,091	7,101	1,212	2,893	39,709	+17	529,084	989,799	−47	3,005
Other	11,800	45,404	65,329	21,961	33,408	31,821	209,723	−11	2,204,592	2,278,245	− 3	17,532
Unclassified	2,214	7,297	8,042	11,286	56,668	6,441	91,948	+17	1,142,809	1,232,846	− 7	27,314
State & Municipal	33,433	97,877	106,569	107,248	114,093	66,626	525,846	−36	6,262,173	7,395,369	−15	58,224
Federal	6,515	9,863	58,374	11,070	74,363	13,288	173,473	− 6	2,366,074	2,568,000	− 8	22,782
Private, Total	87,363	176,729	168,297	112,355	168,045	81,613	794,402	+30	8,728,666	6,737,617	+30	42,151
Bridges	.....	100	.....	1,883	600	.....	2,583	+158	10,923	9,996	+ 9	.....
Buildings: Industrial	10,868	23,108	79,336	53,344	33,746	14,532	214,934	+30	2,490,589	1,536,516	+62	7,335
Mass housing	54,305	119,697	42,172	38,151	88,070	44,349	386,744	+36	3,949,418	3,246,565	+22	20,900
Commercial	21,930	33,386	21,556	14,288	26,788	22,601	140,549	+ 2	1,839,135	1,582,226	+16	11,871
Unclassified	260	438	25,233	4,689	18,841	131	49,592	+103	438,621	362,314	+21	2,045
Total Oct., 1959—5 weeks	127,311	284,469	333,240	230,673	356,501	161,527	1,493,721*	− 8	.....	.....	....	81,006
Total Sept., 1959—4 weeks	118,628	341,095	239,568	328,543	267,753	242,486	1,538,073*	....	.....	.....	....	115,746
Total Oct., 1958—5 weeks	102,469	413,231	287,635	281,697	322,268	213,972	1,821,272	....	.....	.....	....	144,195
Ten Months—1959	1,114,825	3,717,668	3,121,809	3,078,897	3,557,850	2,765,864	.....	....	17,356,913*	.....	+ 4	1,263,300
Ten Months—1958	1,121,096	4,235,947	2,302,371	3,048,371	3,328,411	2,664,790	.....	....	.....	16,700,986	....	1,383,992
% Change '58 to '59	−1	−12	+36	+1	+7	+4	.....	....	.....	.....	....	−9

* Not including Alaska & Hawaii:
Add: Alaska Oct. '59: 4,044 Sept. '59: 3,589 10 Mos. '59: 83,505 Add: Hawaii Oct. '59: 4,447 Sept. '59: 7,294 10 Mos. '59: 45,265

ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $53,000; *other public works,* $38,000; *industrial buildings,* $110,000; *other buildings,* $400,000.

Bargaining Gets a New Look

- **Kaiser's break-away promotes construction concept of joint, voluntary approach to labor problems.**
- **New committees will study how to share gains in productivity, negotiate changes in work rules.**

The Kaiser Steel Corp. and the United Steelworkers of America, AFL-CIO, may have paved the way last week for putting collective bargaining back on the track.

Significance of the labor agreement they reached lies not in its economic terms nor in its breaking of the industry's solid front. The significant thing is its approach to the solution of labor-management problems.

The vehicles it uses are two committees to wrestle, on a practical and flexible basis, with the basic and fundamental issues raised by the steel strike.

The approach is similar to the one pioneered by the construction industry in two of its recent and far-reaching labor relations programs—the "Ten Commandments" and the Construction Industry Joint Conference. Kaiser and the union have followed the lead of the construction industry in assuming that labor-management problems can be solved voluntarily if approached in an atmosphere of mutual trust and understanding.

One of the new Kaiser-steelworker committees will work on the problem of work rule changes. The other will try to find an answer to the increasingly controversial question of how much in the corporate till should go to workers.

Both Kaiser and the union attach the most significance to the second committee, which they say has the potential of eliminating labor contract deadlines and strikes as well as a lot of the friction that now exists between labor and management.

Official task of the committee—on which three disinterested arbitrators of national prominence will serve—is to develop a "long-range plan for equitable sharing, between the stockholders, the employees and the public, of the fruits of the company's progress."

The goal is a formula that:

- Protects workers against increases in the cost of living.
- Increases their chances of stable employment.
- Gives them a reasonable share of the profits that accrue from increases in productivity.

The formula is also supposed to promote labor cost savings and to afford the company room for expansion and progress.

A deadline of July 1, 1960, has been set for the committee's recommendations.

What little is now known about the structure and composition of the committee dispels any suggestion that it is merely a device for tilting with windmills.

Sitting on the committee will be three members each from the industry and the union and three arbitrators who are well known to labor and management generally. The latter are John T. Dunlop, George W. Taylor and David L. Cole.

Mr. Dunlop, a Harvard professor, served for many years as chairman of the construction industry's National Joint Board for the Settlement of Jurisdictional Disputes. He is now impartial chairman of the Joint Administrative Committee of the Construction Industry Joint Conference.

Mr. Taylor, a University of Pennsylvania professor, was recently in the limelight as head of the President's steel fact-finding board. He has served since 1953 as final arbiter of problems that arise under the master labor agreement between the Philadelphia General Building Contractors Association and the Philadelphia Building and Construction Trades Council, AFL-CIO.

Mr. Cole is a former director of the Federal Mediation and Conciliation Service. He has served since 1954 as impartial umpire under the AFL-CIO no-raiding agreement, which formed the basis of the labor merger.

All are men who have promoted the use of voluntarism, discussion, education and fair play as effective tools in labor-management relations.

The other Kaiser-steelworker committee will be comprised of labor and management representatives. They are given the power to negotiate changes in work rules. The assignment is a continuing one. Emphasis is on settlement by mutual agreement.

As important as the machinery estab-

David L. Cole

John T. Dunlop

George W. Taylor

lished by the contract is the attitude toward the problems the machinery seeks to solve.

In explaining what Kaiser is trying to do, board chairman Edgar F. Kaiser made three striking observations:

- Inflation cannot be brought to a dead stop by labor and management in any one industry or by any one round of negotiations.
- Work rules cannot be changed unilaterally to the profit of either labor or management. They have been worked out by both parties over many years and they must be changed and improved the same way.
- All the parties to a business enterprise are entitled to share in the benefits derived from constructive changes.

The cord that apparently ties these together in the Kaiser package is the joint recognition of the common interests shared by labor, management and the public, and of the self-defeating aspects of excessive labor costs.

In translating the recognition into tangible results, Mr. Kaiser has pinned onto the Dunlop-Cole-Taylor committee about the same hopes the construction industry attaches to its Construction Industry Joint Conference. He says the committee has "a tremendous opportunity to pioneer a new era of labor-management relations."

The least the Kaiser approach may do is to help put back into collective bargaining the elements of "collective" and "bargaining," which Mr. Cole once said seem to have gotten lost.

(For more on Kaiser see p. 25.)

Union Protests Consultants' Role

State highway use of consulting engineering firms has been criticized and condemned by a group of organized engineers in New Jersey.

The New Jersey State Highway Engineers' Association—a part of the American Federation of Technical Engineers, AFL-CIO—has called for a complete investigation of the practice in New Jersey.

The association says the "bulk use" of private engineering consultants is costing the taxpayers unnecessary money and stifling the careers and full professional usefulness of highway department engineers.

The association represents engineers and technical employees of the New Jersey State Highway Department.

The complaint went to the governor and to New Jersey lawmakers on both the state and federal levels. The association contends that the "great majority" of road location and design engineering work in the state is being done by consultants through negotiated contracts.

It estimates that the number of employees of these outside firms doing state highway engineering work in New Jersey exceeds the number of engineering employees of the highway department. The association says there has been no appreciable increase in the engineering staff of the department in the last five years and that proven and competent highway engineers are being assigned routine duties rather than major design work.

It charges that consultants cost the taxpayers up to "three times" what it would cost to use state engineers.

The engineers claim their economic welfare, security and future outlook as career state employees are being impaired.

Lockouts May Raise Labor Costs

To what extent do contractors run the risk of increasing their unemployment insurance costs by engaging in a lockout?

The answer depends on whether the compensation claimants idled by the lockout are technically participants in the strike.

Here are the answers that have been given in two recent cases:

- Oregon's new Unemployment Compensation Appeals Board has ruled that members of nonstriking crafts laid off in a dispute last year between teamsters and operating engineers, on the one hand, and the Associated General Contractors, on the other, were entitled to unemployment benefits because they were not participating in the dispute or were not directly interested in it.

The AGC had shut down nonpicketed jobs on the theory that a strike against one is a strike against all.

- A Kentucky state court has ruled that teamsters are not entitled to compensation when idled by a lockout under the following circumstances:

A Louisville local struck one ready-mix supplier over labor demands. The struck firm was one of 12 that negotiated with the union as a group. The other 11 firms shut down. They said they did so to prevent absorption of the struck firm's business by them.

The court said teamsters locked out of the 11 plants stand in the shoes of strikers. It reversed the Unemployment Compensation Commission.

OFFICIAL PROPOSALS

Bids: December 2, 1959

Narrows Bridge Piers

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY
SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattam, New York 35, N. Y., as follows:
Until 11 A.M. on Wednesday, December 2, 1959

For Narrows Bridge Contract No. NB-1B, Brooklyn Tower Pier. The bid must be accompanied by a deposit in the amount of $250,000.00

and

For Narrows Bridge Contract No. NB-1S, Staten Island Tower Pier. The bid must be accompanied by a deposit in the amount of $250,000.00.

Bidders may submit bids for either one or both of the above contracts.

Piers will be founded on open dredged caissons in The Narrows, New York Bay. Alternate design for Brooklyn pier provides shallow open dredged caisson supported on 36" diameter piles to rock.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

Bids: November 24, 1959.

Contracts MF-102.699 and EXD-120.072

THE PORT OF NEW YORK AUTHORITY
Sealed proposals for the following work will be received at the Office of The Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract MF-102.699—1959-1960 Test Borings—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, November 24, 1959.

Contract EXD-120.072—Port Authority Building—Alterations in Room 715—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, November 24, 1959.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y., and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 5, 1959

Bids: November 30, 1959

Tenders

Tenders are invited for the supply of all or any of the following items of equipment:—

(a) P.V.C. insulated, armoured multicore cable. Each core 7/.029 in 250 volt grade.

(b) Paper insulated lead covered armoured and served cable, 660 volts.

Specifications may be obtained on application in writing to the Purchasing Officer, Trinidad and Tobago Electricity Commission, P. O. Box 121, Port of Spain, Trinidad, W. I. Closing date for Tenders November 30th, 1959.

Bids: November 18, 1959.

Concrete and Steel Bulkhead Wall

BROWARD COUNTY PORT AUTHORITY
Sealed bids will be received until 3:00 P.M., E.S.T., November 18th, 1959, for furnishing, with the exception of steel sheet piling, all materials, labor, equipment, tools, etc., for the Construction of approximately 1400 linear feet of concrete and steel Bulkhead Wall on the North and East sides of Pier 3, Port Everglades, Florida. For particulars, address R. T. Spangler, Port Manager, Port Everglades Station, Fort Lauderdale, Florida.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 19, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time, on the 19th day of November, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

STATE OF NEW YORK — DEPARTMENT OF PUBLIC WORKS — ALBANY, NEW YORK
LETTING OF NOVEMBER 19, 1959

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 23)	FARC 59-153	Hunter-Windham, Pt. 2, S.H. 797 Cairo-Windham, Pt. 4, S.H. 5583 Cairo-Windham, Pt. 3, S.H. 8053 Project F-1159(3)	4.96	Asph. Conc. Pavt. = 4.91 Miles; Misc. Work = 0.05 Mi. R.C. Slab Bridge 25.1' Sp. R.C. T-Beam Bridge 36.3' Sp. Comp. Beam Bridge 43.6' Sp.	$58,000 Plans $5	$1,073,000
Rensselaer (Rte. 22)	C.R. 59-4	Center Berlin-Petersburg, S.H. 1421 (Cemetery Shown on R.O.W. Map 111, Parcel 179)	....	Removal of Human Remains	$70 No Plans Proposal Only $2	1,200
Rensselaer (Rte. 22)	FARC 59-152	Center Berlin-Petersburg, S.H. 1421 Stephentown-Center Berlin, S.H. 8163 Petersburg-North Petersburg, S.H. 8059 Project F-257(4)	6.98	Asph. Conc. Pavt. = 6.94 Miles; Misc. Work = 0.04 Mi. R.C. Twin Box Br. 21' Sp. R.C. Slab Br. 30.5' Sp.	$93,000 Plans $5	1,687,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida (Rtes. 12 & 12C)	R.C. 59-155	Marcy Hill-Trenton, S.H. 931 Whitesboro-Trenton, S.H. 5325	....	Removal of 169 Trees at Var. Locations	$700 Plans $5	13,000
Oneida (Rte. 46)	R.C. 59-158	Durhamville-Rome, S.H. 1137	7.38	Asph. Conc. Type 1A Pavement	$62,000 Plans $5	1,098,000
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland Onondaga & Oswego	R.C. 59-156	Various State Highways on Rtes. 5, 11, 13, 41, 49, 3, 92, 208Y, 257 & 281	....	Removal of 198 Trees	$600 No Plans Proposal Only $2	11,000
Onondaga (Int. Tour. Rte. 81)	FISH 59-23M	Interstate Route 505 (Nedrow to Tully) FISH 56-11 and FISH 56-12 Project I-81-2(28)67	11.47	Misc. Work (Roadside Devel. Drain., Fenc. & Maint. Area)	$28,000 Plans $5	516,000
Tompkins (Rte. 38)	FARC 59-130	Groton Village, S.H. 1002 Project F-610(7)	0.27	Asph. Conc. Type 1A Pavt. R.C. Twin Box Br. 20'	$8,000 Plans $5	144,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee & Monroe (Rte. 19)	R.C. 59-159	Lake, Part 1 (Brockport-Sweden), S.H. 171 Lake, Part 2 and Fourth Section, S.H. 492 Leroy-Brockport, Pt. 4, S.H. 1755	4.67	Asph. Conc. Pavt.	$27,000 Plans $5	490,000
Orleans (Rte. 104)	R.C. 59-157	Gaines-Murray, Pt. 1, S.H. 8237 Gaines-Murray, Pt. 2, S.H. 5697 & Ridgeway-Gaines, S.H. 8202	4.50	Asph. Conc. Pavt. Type 1A = 4.47 Mi. Misc. Work = 0.03 Mi. R.C. Triple Open Box Br. 50.9'	$35,000 Plans $5	644,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	FAC 59-19	City of Buffalo: Kensington Expressway Arterial Highway, Sect. 1, Cont. II (Hickory St. to E. Utica St.) Project U-377(17)	1.69 (0.73 Acc.)	Asph. Conc. Pavt. = 0.73 Mi. Grad, Walls & Water Lines = 1.39 Mi. Misc. Work = 0.30 Mi. 5 Hy. Supe. Comp. I-Beams 2 Sp. 154.2', 2 Sp. 158.3', 4 Sp. 183' 2 Sp. 151.3' and 2 Sp. 118.9'; 2 Ped. Overpass I-Beam with Conc. Slab; 4 Sp. 206.5', 3 Sp. 151.1'	$210,000 Plans $10	3,803,000
Niagara	FASS 59-25	Carmen Road, Pt. 3, Co. Rd. 131 Project S-573(1)	3.04	Asph. Conc. Pavt.	$18,000 Plans $5	335,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany (Rte. 21)	R.C. 59-112	Andover-Alfred Station-Almond, S.H. 5502	3.17	Asph. Conc. Pavt. = 3.16 Mi. Misc. Work = 0.01 Mi.	$27,000 Plans $5	489,000
Steuben (Rtes. 15 & 17)	FARC 59-154	Painted Post-West City Line of Corning, Pt. 1, FASH 59-10, Corning-Painted Post, S.H. 5026 Proj. U-225(17); U-593(13)	0.90	Electrical Lighting Facilities	$2,800 Plans $5	50,000
Steuben (Rte. 414)	R.C. 59-160	Corning-Post Creek, S.H. 1745A	3.18	Asph. Conc. Pavt. = 3.16 Mi.; Misc. Work = 0.02 Mi. 3 Brs. R.C. Twin Box 23.1' Sp. 26.8' Sp. 23.5' Sp.	$50,000 Plans $5	887,000
Yates (Rte. 14)	R.C. 59-114	Starkey-Dresden, Pt. 2 S.H. 8353	8.49	Asph. Conc. Pavt. Widen & Repair Exist. 12' Sp. I-Beam Br. 719.9'	$100,000 Plans $5	1,850,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Rtes. 348 & 9B)	R.C. 59-161	Rouses Point Village, S.H. 5228 Rouses Point-Canadian Line, S.H. 5337 Rouses Point Village-International Line, S.H. 9225	1.23	Reinf. Conc. Storm Sewer Pipe	$9,000 Plans $5	159,000
Clinton	FASS 59-26	Peasleeville Road, Co. Rd. 16 Project S-549(1)	4.33	Bit. Double Surf. Treat. Pavt. R.C. Twin Box Br. 32.3'	$28,000 Plans $5	497,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland	PIP 59-1	Palisades Interstate Parkway Sect. 2 and Part 1 (N. J. St. Line to Rte. 202)	14.62	5' Aluminum Chain Link Fence	$8,000 Plans $5	140,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Chenango	FAC 59-18 FASH 59-24	City of Norwich: East Main Street Arterial Highway East River Road State Highway Project U-620(11)	1.45	Asph. Conc. Type 2B = 0.86 Mi., Asph. Conc. = 0.57 Mi. Misc. Work = 0.02 Mi. Br. 3 Sp. Comp. I-Beam 201.6'	$60,000 Plans $5	1,091,000
Schoharie (Rte. 146)	FARC 59-150	Gallupville-West Township, S.H. 8481 Project S-820(2)	1.84	Asph. Conc. Pavt.	$23,000 Plans $5	421,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Kings (Int. Tour. Rte. 278)	FIGE 59-1	Interstate Route Connection 512 Gowanus Expressway, Cont. 1A (Third Ave. at 60th St. to Seventh Ave. 65th St. to 92nd Street) Project I-278-1(44)	2.07	Demolition of Buildings	$55,000 Plans $5	1,003,000

(Continued on following page)

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

(*Continued from preceding page*)

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
Nassau	PSC 7277	Elimination of Grade Crossings of the Long Island Railroad (Main Line and Central Branch) with Carnation Ave., Tulip Ave., Tyson Ave. and Plainfield Ave. in the Village of Floral Park	2.42 (1.48 Acc.)	Railroad Track Relocation and Misc. Work = 2.42 Mi. Asph. Conc. Pavt. = 1.48 Mi.; 8 Plate Girder R.R. Crossings 130.7', 177.4', 177.4', 64', 64.5', 80.7', 75.2' and 65'; 3 R.C. Slab Pedestrian Sub. Crossings 17.7', 10' and 10'; Floral Park Viaduct R.C. Slabs 1047.5'	$400,000 Plans $10	7,116,000
Queens	B.P. 59-77	Rockaway Beach (Beach 62nd Street to Beach 70th Street)	....	Four Stone Groins Beach Protection	$45,000 Plans $10	870,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: December 11, 1959

Reconditioning, Reshaping and Surface Treatment Route No. 1—South Road Between Kilometers 27 and 65

DIRECTORATE OF HIGHWAYS
MINISTRY OF COMMUNICATIONS AND PUBLIC WORKS
REPUBLIC OF HONDURAS
ADVERTISEMENT FOR BIDS
CONTRACT No. 502—P (DST)

Sealed Proposals for the above noted contract described herein will be received by the Director General of Highways at the Offices of the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., until 10:00 A.M. Honduras Time on December 11, 1959 and then publicly opened.

The work to be done under this Contract shall be commenced on the date specified in the Notice to Proceed, or such earlier date mutually agreed upon by the Ministry and the Contractor. All work under the Contract shall be completed within 240 calendar days after such date, and consists of furnishing all plant, labor, materials and equipment, and performing all work in strict accordance with the Specifications, Schedules and Drawings forming parts thereof, for the Reconditioning, Reshaping and Surface Treatment of the South Road, (Route No. 1), between Kilometers 27 and 65.

Proposals shall be submitted covering all the work on the South Road, (Route No. 1), between Kilometers 27 and 65 as delineated on the Unit Price Schedule Form.

The approximate quantities of the principal items of work are:

Reconditioning and Preparing Subgrade	38 LK
Select Material Base	42,000 CM
Two Course Surface Treatment	312,000 SM

Prospective bidders can obtain copies of the plans, specifications and contract documents for a fee of 50 Lempiras from the Office of the Director General of Highways, nancial Statement and Experience Questionnaire and a Plan and Equipment Questionnaire on form supplied by the Directorate of Tegucigalpa, Honduras. A Contractor's Fi- Highways will be required of all bidders. All proposals must be on the forms prescribed by the Directorate of Highways and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of ten (10) percent of the total amount shown in the Proposal Form Unit Price Schedule in the form and manner specified in the Instruction to Bidders.

Individuals or firms doing business under ficitious names and all foreign corporations shall register with the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., before any proposals submitted by such corporations, individuals or firms will be considered.

Award of the above contract, if any award be made, will be to the lowest responsible bidder or bidders. The Government reserves the right to reject any and all proposals and further reserves the right to waive any informality in proposals received when such rejection or waiver is in the best interest of the Government.

The Government of Honduras has entered into a Loan Agreement with the International Bank for Reconstruction and Development for a loan in various currencies to finance the foreign exchange costs of a Highway Construction Project of which this contract will form a part. The Government of Honduras has also entered into a Loan Agreement with the Development Loan Fund of the United States Government for a loan to finance the local currency costs of the Project.

DIRECTOR GENERAL OF HIGHWAYS
Ing. Angel Casanova B.
October 19, 1959.

Bids: November 24, 1959

Furnishing and Delivery of Rails and Accessories for the Lewiston and Tuscarora Power Plants and the Waterways Intake Gate Transfer Car

POWER AUTHORITY OF THE STATE OF NEW YORK
NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. FA-N-23035
NIAGARA CONTRACT NO. NP44

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. destination, Niagara Falls, Niagara County, New York, of the rails and accessories for the Lewiston and Tuscarora Power Plant and the Waterways intake gate transfer car until 10:30 A.M. Eastern Standard Time on the 24th day of November, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be opened and read aloud.

The work consists of fabricating and delivery thereof of approximately 760 tons of rails and accessories for the Lewiston and Tuscarora Power Plants and the Waterways intake gate transfer car.

Delivery of the above items shall be completed on or before April 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposals Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: November 12, 1959

Benjamin Franklin Bridge Contract No. 25-A

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE of NEW JERSEY
Administration Building
Camden, New Jersey

Sealed bids will be received for "Fault Indicating System and Rehabilitation of Existing Electrical System" for the Benjamin Franklin Bridge, known as Contract No. 25-A, at the office of the Secretary of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:00 P. M., Eastern Standard Time, Thursday, November 12, 1959, at which time and place they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening bids.

Each proposal must be accompanied by a certified check in the sum of $10,000, payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the Contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the Contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOHN M. McCULLOUGH
SECRETARY

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

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• POSITIONS VACANT

Civil Engineers experienced in design of sanitary engineering projects or in related fields, including one experienced and qualified specification writer. Mid-West location. Please send complete resume. P-2556, Engineering News-Record.

Civil Engineer (Structural): The City of Miami, Florida, is accepting applications from qualified applicants in order to conduct an unassembled-written examination on December 29th and 30th, 1959, for the purpose of establishing a register for the Civil Service classification of Civil Engineer II (Structural). The in-hiring rate of pay is $534.00 per month plus $25.00 per month cost of living bonus. Age 27-50 years. Education and experience requirements: BS Degree in engineering plus five (5) years progressive Civil Engineering experience, four of which must have been in the design of reinforced, prestressed concrete and steel structures—or—nine (9) years progressive experience in the work described above. Send summary of qualifications, experience and transcript of college credits to: Robert A. Richmond, Examining Supervisor, City of Miami Civil Service Office, 3318 Pan American Drive, Miami 33, Florida.

Engineer, Architectural, Structural or Civil- experienced in prestressed concrete design. Send references, resume, date available and salary requirements to Box 10368, San Antonio 21, Texas.

Construction Engineer—Age 25 to 35—Work under General Superintendent, organize and layout job, some purchasing. Capable of handling job personnel and subcontractors. Aggressive and cost conscious. Considerable travel involved. Excellent opportunity. State education, experience and references. Reply to P-2862, Engineering News-Record.

Estimator—Top pay and working conditions for a fully experienced productive competitive estimator. Wingate Construction Company, 34 South 17th St., Phila. 3, Pa.

Architect or Architectural Engineer. B.S. with experience or M.S. Degree. Research on the development of steel curtain-wall systems and residential applications of steel products. Work includes design, laboratory testing, development of manufacturing processes and supervision of field trials. Large Research Laboratory Pittsburgh area. Submit resume and salary requirements to P-2808, Engineering News-Record.

Civil Engineer—presently registered or capable of becoming registered in Missouri; to join young expanding firm in the photogrammetic field. Some client contact, some field work and design. Excellent future for ambitious man. Furnish resume and salary requirements. P-2903, Engineering News-Record.

Superintendent Illinois building construction company, state education and experience in reply to P-2904, Engineering News-Record.

Soils Engineer: Prefer M.S. & P.E. license with at least 5 years experience. Backgrd. in Geology desired. Must be U.S. citizen. Location Midwest. Reply in full giving availability and salary desired. Goodkind, & O'Dea, Inc., 108 West Lake Street, Chicago, Illinois.

Engineer, familiar with bituminous surface treating and penetration. Capable of estimating and sales. P-2791, Engineering News-Record.

• POSITIONS VACANT

Sales Manager: Successful, high-rated, young, manufacturer of building construction machines, requires General Sales Manager with proven accomplishments, same capacity, same industry in past 10 years. Able to organize and develop hard-hitting sales. Progress to General Manager. Salary $15,000; more depending on increased sales and profits. Reply fully. Box 72, Cincinnati, 38, Ohio.

Top level Checker, capable of checking any type structures; such as bridges, (beam, girder, bascule, etc.), commercial buildings, large gantry cranes, etc. Must be willing to help with detailing (rarely) if necessary. One of the three top jobs in the Drafting Dept. Permanent. Opening due to retirement of employee with 32 years service. Solid Milwaukee, Wisconsin fabricator. P-2991, Engineering News-Record.

Construction Superintendent—Experienced in Industrial and Public Buildings. Must be efficient and able to assume complete responsibility for Project. Send Qualifications and Salary desired. P-2971, Engineering News-Record.

Wanted: Engineer for position as Technical Adviser having thorough knowledge and experience in development, construction and maintenance of Public Housing Projects. Must be familiar with preparation of plans and programs, and to act as liaison between Regional Public Housing Administration, Local Housing Authority, Architects and Contractors. Permanent position in the maintenance of entire local, program in large southeastern city. Submit resume of qualifications and salary wanted with application. Civil engineering or architectural graduate preferred. P-2995, Engineering News-Record.

Engineer, registered in Ohio, experienced in handling complete engineering and design layout of lots, roads and utilities, and supervising construction of land development for housing projects. P-2966, Engineering News-Record.

Engineer, heavily experienced in manufacturing all types of precast and prestressed concrete products. Excellent opportunity for aggressive conscientious individual. P-2960, Engineering News-Record.

Superintendent—Bureau Water and Sewers. The City of Batavia, New York is accepting applications for the position of Superintendent, Bureau of Water and Sewers. Will have charge of water filtration plant, water distribution operations and sewage disposal system. Desired qualifications include college degree in sanitary or civil engineering with experience in sanitary operations preferred. Eligibility for Professional Engineers license preferred but not required. Salary range $6408 to $7302. Send resume and application to City Administrator, City Hall, Batavia, New York.

Sales Engineer: Civil or equivalent, able to estimate accurately, quote general contractors and close sub-contracts for major subcontractor-manufacturer. Must be able to relocate and travel in northeastern states. Write stating complete background, recent photograph and expected salary range to P-2956, Engineering News-Record.

• POSITIONS WANTED

Heavy Construction Engineer. 45. 20 yrs. exp. from estimate, bid preparation, plant construction to project completion, field engr. office engr., costing, estimation, supervision and assistance to crafts superintendents during project. Served as Ch. Engr. on hydro-dams & powerhouses, highways, bridges, etc. PW-2894, Engineering News-Record.

• POSITIONS WANTED

Supt. or Proj. Engr.—Married—Age 31—Experienced in all phases of highway const. estimating & supervision. I.C.S. Educ. presently located in metropolitan area. PW-2870, Engineering News-Record.

Graduate Civil Engineer-Registered Land Surveyor, 32, 10 yrs. experience; land surveying, subdividing including sewer, water, and road design. Location open. PW-2864, Engineering News-Record.

Project Management. Top References. 22 years exp., incl. negotiating contracts, contract administration, processing claims. Heavy constr. U. S. and O. S. PW-2816, Engineering News-Record.

Graduated Italian Civil Engineer 12 yrs. 6 yrs. with American Firms, concrete structures & road design, desires overseas employment. Fluent English, French, Spanish, Portuguese. PW-2932, Engineering News-Record.

General Superintendent. 25 years experience. Industrial, Public, and Commercial buildings. Includes all phases of construction. Estimating, organizing, completions, negotiations for extras etc. Minimum salary $15,000.00. PW-2925, Engineering News-Record.

Hard Rock & Soft Ground Shaft & Tunnel Man, 39 yrs. experience. Have large following of men. Desires position supt.—will go anywhere—age 57. PW-2923, Engineering News-Record.

Field Man—Personnel, Purchasing, Timekeeping, Cost, Payroll, Paymaster. A 1 references—willing to travel. PW-2916, Engineering News-Record.

C.E. well versed in field inspection, highway construction, bridge construction, steel design, fabrication & erection. Desires position that will insure permanent location for family. PW-2914, Engineering News-Record.

Project Manager. B.S.C.E., 16 yrs exp Hvy Const. Hwys. Flood Control, Earthwork, Bldgs, $15,000 per. A. E. Eiswirth, P.O. Box 48, Clayton 5, Mo.

Construction Engineer, BSME, P.E. Mo. 20 years experience, 10 foreign, in all phases of project development. Desire position as Superintendent, Resident Engineer, Service Engineer or Project Manager. Present position Project Manager in Peru. Speak Spanish. Available in November for foreign employment prefer Latin countries, especially Mexico. PW-2851, Engineering News-Record.

Position desired as Construction Inspector— over 35 years masonry experience. Prefer small community. Presently employed. Salary secondary to opportunity. PW-2813, Engineering News-Record.

Executive, broad experience in all phases of Building and Heavy Construction, seeks contacts with large volume contractors requiring top man to assume full responsibility. C. O. Sutherland, 47 Rich Avenue, Mount Vernon, N.Y. Telephone MO 4-7927.

Construction Superintendent. 35 years experience on all types construction-industrial, schools, etc. Age 55 married. Wants responsible position. Will relocate. PW-2732, Engineering News-Record.

Civil Engineer—5 years construction experience; desires responsible position in construction supervision near East or West Coast. PW-2998, Engineering News-Record.

(Continued on page 111)

SUPERINTENDENT FOR MAJOR STRUCTURAL STEEL FABRICATING PLANT

THIS IS THE MAN we are seeking to manage our Mid-East Steel Fabricating Plant:

He must be experienced in **all** phases of structural steel fabrication methods and costs—

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He must have sterling references as to business ability, stability and character.

Preferably he should have a college education and with an unusual record of job accomplishments.

If you are this man—the only way we will know is to hear from you. Make your resume as complete as possible, including age and pertinent facts which you feel would give you an "edge" over other applicants.

Excellent salary.

Write in strict confidence to

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Must be capable of scheduling and supervising in its entirety the fabrication and erection of sheet metal ductwork. Must be able to coordinate the sheet metal erection with the overall construction effort.

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Must be capable of scheduling and supervising in its entirety the construction and installation of all electrical work. Must be able to coordinate the electrical installation with the overall construction effort.

Must be United States Citizens or present evidence of U. S. residency for one year.

Subsistence and Quarters, Medical, Laundry, and Transportation furnished by the Company.

Send resume to
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Duration—2 years plus
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Mr. Employee you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

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Classified Advertising Division

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330 West 42nd St., New York 36, N. Y.

• POSITIONS WANTED
(Continued from page 109)

Graduate B.S.C.E. with 10 years experience in most phases of reinforced and structural steel erection including all types of municipal bldgs, flood control work and towers. Past 3 years as sub-contractor on same. Desire position in Calif. area near Los Angeles or San Francisco. Age 35, PW-2992, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

General construction superintendent, over 30 years experience, all types and sizes of bridges, Marine and industrial foundations, one or large groups of structures, Caissons and cofferdams, fully qualified to supervise and train foremen and superintendents all crafts, plan and expedite job, set up cost systems, co-ordinate job with subs, etc. Available at once for interview, no degree. Mobile can relocate. PW-2961, Engineering News-Record.

Wanted: Administrative Position. Experienced Government Contracts, specifications; private contracts and local codes. Responsibility administrative direction, estimating, sub-contracts, securing prices and materials, stock and material control, preparing varied schedules applicable to above of M.E. nature for General Contractor. Past two years General Manager leading manufacturer's distributor Air Conditioning and Refrigeration including Sheet Metal Department. Varied field experience—Mechanical Engineering. Member SAME & RSES. Available 60 days. PW-2967, Engineering News-Record.

Master Mechanic. Capable, Sober. PW-2957, Engineering News-Record.

Cons't. Sup't.: Roads & Aircrafts, age 43, 25 yrs. exp. in all phases of road cons't.; grade & drain, asphalt & concrete paving. Engineering background. From bidding to completion. PW-2988, Engineering News-Record.

Fully experienced prestress and precast concrete engineer & administrator interested in managing or establishing a central fabricating plant (bridge & building products). PW-2993, Engineering News-Record.

Construction Engineer—C. E.—Estimator— Co-ordinator 12 years experience. Commercial and Industrial Construction. Experienced with jobs for A.E.C. Corps of Engineers. Presently employed but willing to relocate. PW-2941, Engineering News-Record.

Electrical Superintendent. Experienced in the Construction of Power houses Steam & Hydro. Industrial plants, Substations, Transmission lines, Distribution systems, Engineering background 25 years experience will relocate. PW-2954, Engineering News-Record.

Estimator & Project Manager. 7½ years experience in commercial, industrial, and institutional construction. PW-2948, Engineering News-Record.

Structural Engineer—Lic. C.F.—Calif. presently Chief Engineer—9 years tech. and admin. exp. with commercial, industrial and institutional structures. Desires employment abroad (with family). Qualified for design or supervision in field or office. PW-2944, Engineering News-Record.

Combination Estimator-Construction. Available January. Advance planning to final bids; contracts negotiations. 18 yrs. private and gov't. experience. 8 yrs. Mediterranean area. PW-2912, Engineering News-Record.

Executive—Contracts Manager. Attorney. Administrator. 15 yrs Legal-Construction Experience. Govt. Contracts, employed. PW-2947, Engineering News-Record.

Crane & Shovel Salesman, experienced with Manufacturers & Distributors. Also Compressors, Pumps, Tractors, etc. PW-2002, Engineering News-Record.

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BO-2976, Engineering News-Record
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THE CONSTRUCTION INDUSTRY has a vital interest in the settlement of the steel strike over and above its growing need for steel. This is because the principal point at issue is "featherbedding"—the maintenance under union work rules of jobs that management considers unnecessary. And this is an affliction not unknown to construction.

The settlement of this particular strike will not, of course, produce a solution to the featherbedding problem. It could, however, lift it to such prominence that public opinion would persuade the government that the time has come for positive action to encourage management and labor to seek a solution. And this would be a distinct gain, since governmental leadership has heretofore been conspicuous by its absence.

Both labor and management need such leadership in order to tackle featherbedding as the national menace that it is, rather than respectively to condone it and to fight it as they do now.

Labor's argument against work rule changes in the steel industry, for example, is that it must protect the workers' jobs. It makes no distinction between necessary and unnecessary jobs. Management's argument is that there is a distinction, and that it cannot protect the necessary jobs if it is forced to support those which are unnecessary.

In the meantime no one is protecting the public, and the rest of the nation's business that has been hurt by the long steel strike. No one in fact is protecting the steelworkers who are out of jobs.

In the last analysis this protection must come from the federal government. It did not act promptly enough in the steel strike. Perhaps it couldn't because of a lack of legal power to act effectively. But in any event it is not legal power to force a solution that is needed, so much as it is leadership to encourage labor and management to eliminate featherbedding permanently as a sore point in labor relations.

A few years ago the government sponsored a White House Conference on Education. It dramatized the problems we face and it brought forth many suggested solutions. Something similar is needed to dramatize the problem of featherbedding so that labor and management can be encouraged to seek its elimination by methods that will be fair to the working man and not inconsistent with management's requirement for efficient operations. Such methods are possible. They could be developed by arbitrating every labor dispute that involved featherbedding, but it would be far better to have some universal guide lines so that disputes would not originate.

The need for such guide lines will be painfully evident again this month when negotiations begin between labor and management in the railroad industry. Here, too, the most prominent issue is featherbedding, and if a solution cannot be hammered out another damaging strike may occur.

If the federal government continues to procrastinate in providing leadership to define and control featherbedding, it will be forced to institute some form of compulsory arbitration. This would be a step backward in labor relations. It would be much better if the unions and management would themselves attack the broad question of "Is that job necessary?". Government leadership is the catalyst that is needed.

Aid to Engineering Education

FORD FOUNDATION FUNDS are now to go specifically and generously to engineering education. A total of $19 million will go to ten engineering schools with the hope of the Foundation that it can help "renovate the preparation of engineers." Faculties will be bolstered; curricula will be modernized.

The announcement was made in Washington at the annual banquet of the American Institute of Consulting Engineers. And since the American Society of Civil Engineers was also in convention in the city, there was opportunity to sense reaction to the news. The general attitude seemed to be that it was a lot of money that could do a lot of good. But, understandably, there was a feeling that too few schools were going to share in the distribution.

This concern may be shortlived. In announcing the grants, Foundation President Henry T. Heald—a veteran engineering educator himself—said his organization expects "to follow these initial actions with others." It is certainly hoped that this is the case. For at the risk of being caught looking a gift horse in the mouth, engineers who are alumni, friends and faculty of institutions not among the chosen ten have been critically analyzing the Ford grants. One educator called their announcement "the worst public relations stunt the Ford Foundation ever pulled." Another had reassurances from the Foundation that his school's request for aid was still under favorable consideration, although it would not be among first announced grants.

It is too bad the Ford Foundation announcement had to be received with such mixed emotions, for surely it is very good news for engineering education. And even this great philanthropic foundation has limits on what it can do. Mr. Heald stressed in his announcement that no single foundation can constitute the sustaining force for the financial aid that engineering education can use. He placed this responsibility rather on all society.

Still, it is easy to commiserate with those of the engineering schools not yet blessed by the Ford Foundation's newly directed generosities, and hope with them that these grants are indeed initial actions to be followed with others by the Ford Foundation and by whomever else its generosities may have inspired.

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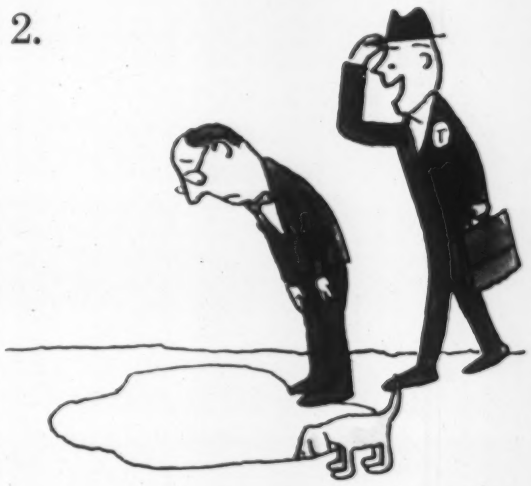
"Yes, *sir!*" replied a foreman, then fell plunk into a hole.

2.



Poor Bob was glum as people come. A Travelers man heard all.
"Hereafter," he suggested, "let The Travelers take the fall.
For under Workmen's Comp and Public Liability,
When workmen or some passer-by gets hurt, we pay the fee.

3.

"But best of all, our safety engineers survey each site,
To find those hidden hazards and to help to set them right.
Statistics all confirm the fact that Travelers safety service
Reduces costs and accidents, saves you from being nervous."

4.

"Exactly what I need," cried Bob, "you don't have to cajole."
The excavation's going great. Bob won't be in the hole!
If *you're* about to build a road, a tunnel, bank or hall—
Secure the plan! Just give a trusty Travelers man a call.

NOTE: *Bonds, Equipment Floaters—Builders' Risk Insurance, too Are other ways The Travelers helps a contractor like you.*

THE TRAVELERS
Insurance Companies
HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

How **ALLIS-CHALMERS** mounts track support rollers on Timken bearings to reduce friction and maintenance on its HD-21 crawler tractor.

How Allis-Chalmers cut power-robbing friction, boosted drawbar power on its HD-21

IT takes more than big power and weight to deliver the big "push" the easy way this Allis-Chalmers HD-21 does. It takes easy-rolling truck wheels, idlers and support rollers. And Timken® tapered roller bearings reduce friction to give that easy rolling. With friction cut, the 225 HP., 45,500 lb. tractor moves easier and more power goes to the drawbar.

And for extra load capacity, Timken double-row bearings are used in the transmission. All told, there are 59 Timken bearings used in the HD-21 to:

1) *Practically eliminate friction.* They're geometrically designed and precision manufactured to roll true. They roll smoother—help parts work easier, longer.

2) *Take all loads, cut maintenance.* Their taper enables Timken bearings to take *any* combination of radial and thrust loads. And because Timken bearings hold shafts concentric with their housings, they make closures more effective in keeping lubricant in, dirt and grime out, maintenance down.

Timken bearings give you many extra advantages. You get service from graduate engineer salesmen, and all the experience of pioneering tapered roller bearing design. And bearing leadership is maintained by the most modern research and production facilities in the bearing industry.

When you buy Timken bearings you receive: *1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Canadian Plant: St. Thomas, Ont. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

First in bearings for 60 years

BETTER-NESS rolls on

TIMKEN®

tapered roller bearings